MEDICITY

Enabling the Design, Development, Implementation, and Operation of

a Health Information Exchange

for

Arkansas Health Information Exchange

May 7, 2010

MEDICITY

THE Standard for Meaningful HIE

Alison Nicholas
1401 West Capitol
Suite 300, Victory Building
Little Rock, AR 7220
Alison.Nicholas@hit.arkansas.gov

May 7, 2010

Dear Ms. Nicholas,

Medicity, Inc. is pleased to submit our response to the Arkansas Health Information Exchange (HIE) Request for Information to the State Health Alliance for Records Exchange (SHARE) in support of your information gathering related to an HIE system solution.   Medicity is uniquely positioned to respond to this RFI as a recognized leader in the HIE market where we support over 700 hospitals and 25,000 physicians today and have the only live, operational statewide HIE in the country.

We are delighted to support your investigation and would be pleased to provide any additional information you need.

We understand that this is a strategic initiative for SHARE and the state of Arkansas. We believe our deep understanding of health information exchange and our unmatched experience can benefit you in your continuing efforts to improve patient care in the community through quicker and easier access to medical information across Arkansas.

If you have questions or comments relating to our response, please do not hesitate to contact me directly at 801-415-2610 or 801-643-4777 mobile.

Sincerely,

Brad Overby /s

Brad Overby
Regional Vice President, Sales
Medicity, Inc.
boverby@medicity.com

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Mandatory Response Requirements

Respondents shall provide the following information:

Name and Category of Respondent, such as systems integrator, licensee, service provider, hardware vendor, etc.

Medicity, Inc.

HIE System Integrator and Service Provider

Name of Vendor Representative responsible for any future business opportunity with the State of Arkansas. Include contact information. General vendor background and corporate information is not required, but may be included in the Addenda.

Brad Overby
Regional Vice President

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Summary Description of Solution, limited to three pages.

Medicity's Care Collaboration Suite improves the quality, safety and efficiency of patient care. It connects healthcare providers in a patient-centered model—powering improved care coordination across a highly secure network of acute and ambulatory care locations.

Our physician, hospital, and HIE customers rely on our common technology **platforms** and our **applications and modules** to enhance workflow, improve patient care, and demonstrate meaningful use of health information technology.

Platforms

Medicity delivers scalable and secure platforms for health information exchange, empowering hospitals, health systems and local, regional and statewide HIEs with a rapidly deployable solution for integrating and exchanging patient information across multiple care locations with disparate information systems.

Medicity Novo Grid

Enabling providers to become meaningful users of health information technology is one of the healthcare industry's top imperatives. Essential to achieving meaningful use is electronically connecting healthcare providers across disparate care locations, both acute care and ambulatory, and enabling the seamless exchange of health information to improve care coordination and collaboration across a community—delivering quality care at the best possible cost.

The Grid forms a secure peer-to-peer network to distribute and exchange health information—including orders, results, transcribed reports, problems, medications, allergies and demographic data—across acute and ambulatory care settings. This platform seamlessly integrates health information across the care continuum, while at the same time creating a patient care "social network" among participating providers—such as primary care physicians, specialists and ancillary service providers—enabling them to more effectively communicate, collaborate and coordinate patient care.

MediTrust

MediTrust—Medicity's SOA technology platform—enables essential HIE services "in the cloud" to improve data quality and consistency across a network of connected providers. The MediTrust platform leverages the Grid's data acquisition and exchange capabilities to aggregate, transform, translate and standardize data as needed to meet specific HIE objectives across a community of care. MediTrust services include:

- *Identity Management Service*
- *Record Locator Service*
- *Data-staging Services*
- *Integration Services*

- *Gateway Services, including*:
  - *Payer Gateway*
  - *Registry Gateway*
  - *PHR Gateway*
  - *CMS Reporting Gateway*
  - *Biosurveillance Gateway*
  - *NHIN/HIE Gateway*

M E D I C I T Y

iNexx

The first open, modular platform for application design and delivery in healthcare, iNexx takes the Medicity Novo Grid platform to the next level—revolutionizing healthcare IT app design and delivery while stimulating innovation and end-user adoption of health information technology. With modular apps developed by third-party partners that leverage the Grid's native HIE capabilities, iNexx gives providers flexibility in choosing healthcare IT solutions to meet specific practice workflow needs and achieve meaningful use. iNexx modular apps work together as a composite suite, offering the core functions providers need to improve patient care and meet regulatory requirements.

By leveraging the social network characteristics established by the Grid, providers on the iNexx platform can easily communicate, coordinate and collaborate to deliver high-quality, cost-effective care. By offering physicians and practices choice and flexibility, the HIE-powered, composite approach that iNexx pioneers will enable providers to rapidly and incrementally become meaningful users of health information technology.

Applications and Modules

Applications

ProAccess Enterprise. With ProAccess Enterprise from Medicity, providers have a single point of access to enterprise health information—across acute and ambulatory care settings—via any web-enabled computer or device in an easy-to-use and highly secure portal framework.

Complementing the longitudinal patient record at the application's core, key functions—such as secure messaging, electronic chart signature, results review and trending, rounding lists, image display, ePrescribing and order initiation—empower providers with improved efficiency and optimized workflow, all within a single web-based application, accessible anytime, anywhere.

With ProAccess Enterprise, providers spend less time searching for patient information and more time focusing on providing high quality and cost-effective care.

ProAccess Community. With ProAccess Community from Medicity, authorized providers have a single point of web-based access to acute care and ambulatory patient information—acquired and aggregated from multiple systems throughout the community, across care settings and organizational boundaries—and presented in a highly secure, easy-to-use portal framework.

To complement the community longitudinal patient record at its core, ProAccess Community delivers capabilities such as an ambulatory medications history, clinical claims summary, discrete problems and allergies lists, CCD exchange, order initiation, referral management, and ePrescribing. With online access to the community patient health record—anytime, anywhere—providers spend less time searching for information and more time focusing on providing high quality and cost-effective care.

ProAccess Health iQ. Medicity's Health iQ quantifies a broad set of quality and performance measures for outcomes analysis. Designed to meet the varied requirements of an enterprise or a HIE, ProAccess Health iQ offers three categories of analytics: Registries, Operational Matrix, and Disease Management/Quality Reporting. The analytics suite can also be customized to meet unique customer requirements.

Modules

Orders. Medicity's Orders module eliminates communication errors while improving workflow and efficiency for both ordering clinicians and the organizations meeting the order. The module adapts to the needs of the ordering clinician—enabling transmission of orders directly from an EHR or providing web-based order entry and tracking to those practices that have not adopted an EHR—and offers work-list management functionality to organizations accepting, fulfilling, and scheduling orders.

Our Orders module features two tracks—laboratory orders and scheduled orders—to address the unique process requirements of these order types. Both modules capture order messages from the EHR or—for web-based order entry—capture such information as demographic, diagnosis, and procedure codes. Both securely deliver the orders to the lab or scheduling department for processing and patient coordination.

Referrals. Medicity's Referrals module closes gaps in the continuity of care—enabling physicians to electronically refer patients and facilitating the timely and accurate exchange of the pertinent patient information among authorized members of the patient's care team.

Using the Referrals module, providers generate and send referrals directly from their EHR or from a web-based referral form. The application enables the requesting provider to attach documents and any information—such as lab and radiology results—relevant to the treatment of the patient.

eRx. Medicity's eRx module enables providers who have not adopted an EHR (or have not adopted one with ePrescribing capabilities) to manage patient medications, check for drug and allergy interactions, and view therapeutic alternatives before sending prescriptions to a targeted pharmacy through the SureScripts network. And the embedded formulary checking results in lower medication costs for a patient—a welcome relief from rising healthcare costs.

Seamless integration with practice management systems means that physicians can pull data directly into the eRx module, eliminating data entry inaccuracies and enhancing productivity, giving them more time to spend on direct patient care. Other built-in time-savers include a list of recently used pharmacies and a user's frequently ordered medications.

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List of Current Installed Locations for the recommended solution.

Medicity has the largest ecosystem of connected healthcare providers throughout the United States, spanning over 700 hospitals, 25,000+ physician practices and more than 250,000 providers. Out of respect for our clients' privacy, we do not provide a list of all our clients. The following HIEs and RHIOs have pre-approved the release of their information. Medicity will be pleased to provide additional information later in the selection process.

Delaware Health Information Network (DHIN)

Medicity is the technology partner for the Delaware Health Information Network (DHIN)—the first statewide clinical health information exchange in the nation.

Medicity's success with the DHIN rollout offers concrete proof of our capacity for success in HIE initiatives. DHIN brings together three competing health systems and two national reference laboratories as well as community provider sites for results receipt. Data passing through the system represents over 81 percent of Delaware's hospitalizations and 85 percent of lab tests performed in the state and accounts for more than 1.5 million transactions per month.

The DHIN implementation includes all of Medicity's ProAccess Community and the MediTrust Cloud Services in a hybrid or confederated environment as well as data center and infrastructure services provided by Dell Perot Systems. The contract was signed in late 2006. Within seven months of the engagement, Medicity had the DHIN solution live in a production environment.

"Medicity's proven and robust technology platform enabled us to deliver clinical results from every major healthcare provider to physicians across the state of Delaware within six months."

Gina Perez, Executive Director, Delaware Health Information Network, explains how Delaware organized to deploy the country's first truly state-wide HIE.

Georgia Cancer Quality Information Exchange

Medicity believes the future of the clinical applications is driven from a single concept—using all available patient data (e.g. EHR, Hospitals, etc.) to provide near real-time clinical guidelines, alerts, disease management and cost analysis information to a provider at the point of care. We also believe this concept applies to medication reconciliation and we are currently able to provide solutions to support this consolidation of information. This also could apply broadly to disease management and clinical decision support as well—the concept of translational research— and how can we use such valuable data to influence and optimize decisions at the point of care.

We are boldly making progress in this arena with our project with the Georgia Cancer Coalition (GCC) for the Georgia Cancer Quality Information Exchange. The project objectives of the *GCC Exchange* are to improve measurement of patient cancer care quality, encourage adherence to standards of cancer care, and deliver patient-centered cancer care and improved outcomes. The *GCC Exchange* will capture and consolidate patient encounter data from Exchange Members hospitals and electronic health record systems.

The GCC project is underway with three facilities (Piedmont Hospital, Harbin Clinic and Amos Medical Center) for their Proof-of-Concept phase, but plan to extend to connect the 42 ACOS providers across the State of Georgia. The data will be utilized to derive various health qualities for each Exchange Member and enable benchmarking of such metrics against population health metrics and all other Exchange Members' metrics. Medicity's role in the project is to acquire, index and de/re-indentify the quality indicator data and will use the following modalities to collect the data—Acute-care Health Information System (HIS) , Ambulatory and Acute-care Electronic Medical Record (EHR) , data entry portal (encounter and summary level data) and Excel upload. This data will then populate analytical reporting tools and data warehouse environment to support provider, facility and GCC (state population) benchmark reporting on certain cancer diseases (e.g., prostate cancer).

The GCC plans to work with other states to emulate this model in cancer care. They have been proving this concept manually for the past two years and have been able to demonstrate how a simple process change at one hospital (e.g. decreasing lapse time between abnormal mammogram and scheduling breast biopsy from 25 to 14 days) significantly improved the outcomes of their breast cancer population. This is just one example of how clinical outcome information at provider level can drive improved clinical process and care.

Pam Arlotto describes how the Georgia Cancer Coalition is a state-level project is leveraging IOM quality indicators and electronic exchange to improve the quality 'feedback loop' to providers of cancer care.

Catholic Health System

Formed in 1998 under four religious sponsors, Catholic Health provides healthcare to hundreds of thousands of Western New Yorkers across a network of four hospitals, fourteen primary care centers, six diagnostic and treatment centers, a freestanding surgery center, six long-term care facilities, two adult homes, three home care agencies, and several other community ministries.

The Catholic Health System (known as "Catholic Health") brings together the strengths and talents of more than 8,200 full and part-time associates and 1,200 physicians under one health care ministry that stretches across all areas of Western New York.

One of the fundamental reasons for the creation of the Catholic Health and its member organizations was to ensure that the health care needs of the community are met in keeping with the mission, vision, and values of our religious sponsors. Our ongoing efforts to provide the community with easy access to a wide range of high quality health care services are enhanced by our deep reverence for life.

Catholic Health began use of the Medicity Novo Grid January 2007. Catholic Health employs this unique healthcare information exchange and interoperability solution to integrate hospitals, physicians and others across the healthcare community. The Grid provides a platform to manage information exchanged among 27 ambulatory facilities with nearly 2,200 physicians in a simple, affordable and secure environment.

Please click on the following link to hear how Catholic Health uses the Medicity Novo Grid to successfully integrate physician practices: http://infosite.medicity.com/audio/CatholicHealth.mp3

Intermountain Healthcare

Intermountain Healthcare (IHC) is a 21-facility, 2300-bed health system headquartered in Salt Lake City, UT. Their services areas extend across Utah and Idaho. They have 3,500 affiliated physicians in approximately 1200 clinics.

IHC became a Medicity customer in July of 2007 due to a board-mandated requirement to protect and enhance referral revenue against competitive forces in the community, including local and regional reference facilities for lab and radiology services and statewide competition from other acute providers. Because of their substantial IT resources, IHC studied the prospect of developing their own interfaces with practices, but eliminated that prospect due to the high cost of developing and maintaining practice interfaces. Based upon successful completion of the initial practices, IHC is now deploying the Medicity Novo Grid at their facilities across Utah.

They have realized and exceeded their deployment goals in terms of number of practices and number of physicians. More importantly, IHC feels that not only have they successfully stopped the loss of business to the national reference labs, but they have also succeeded in improving physician loyalty for other services such as radiology and acute referrals. IHC took a phased approach to deployment, beginning with the delivery of lab data to a variety of EHR-based practices. Building on that success, they began to deliver radiology reports and other transcribed documents such as surgical notes, discharge summaries, ED reports, etc. They plan on adding additional capability in the future including orders, referrals and accepting document from the practices, such as progress notes, pre-natal reports, and more.

Intermountain Healthcare, a large IDN based in Utah, experienced significant results by deploying the Medicity Novo Grid in their Phase One deployment.

"We have seen a substantial increase in the volume of tests that have been referred into our hospitals from affiliated physicians."

Ryan Smith, Asst. VP, eBusiness Intermountain Healthcare

Intermountain Healthcare (IHC) has experienced dramatic results in a rapid timeframe. To learn more about IHC's experience with Medicity, we encourage you to click on the following link,

An audio case study with Ryan describing his deployment of Medicity throughout IHC

Medicity partnered with Intermountain Healthcare to present a webinar on how improving colla-boration with physicians has improved patient care, physician affinity, operating efficiency and their competitive position in the community

Spectrum Health System

Spectrum Health is a not-for-profit, integrated health system based in west Michigan. With over 1,500 physicians, the system includes a medical center, seven regional community hospitals, 140 different service sites, a large multispecialty medical group and a nationally recognized health plan. As west Michigan's leader in outpatient care and its largest health system, Spectrum provides a broad variety of services in diverse provider environments to meet the needs of its community with a commitment to exceptional patient care.

The Challenge. Early on, Spectrum Health recognized two key business issues. To compete in the reference laboratory market, Spectrum needed an outreach result-delivery solution that could be directly integrated with physician practices regardless of where they were on the technology adoption curve, as some providers had adopted an EHR while many others worked in paper-based practices. In addition, Spectrum faced a significant number of unhappy physicians who were overloaded with faxes and constant callbacks. At the time, Spectrum was sending nearly 6,000 faxes to 1,600 physicians every day and with no capability to filter faxes—which not only was expensive and inefficient, but left physicians with a significant workflow challenge. Spectrum needed to add value, reduce costs, increase provider satisfaction, replace paper transactions, and enhance patient care.

Focusing on high volume transactions, Spectrum wanted to take advantage of the opportunity to lead its community in HIE and lay the groundwork for enhancing regional and statewide connectivity in the future.

A Solution for Spectrum Health—Medicity's Novo Grid. In 2007, Spectrum Health began deploying Medicity's Novo Grid to simultaneously meet the needs of physician practices that adopted an EHR as well as support those practices that were still paper-based. Spectrum went live with real-time results delivery of general laboratory, microbiology, AP, radiology and transcribed results and reports. Going beyond just outbound results delivery, Spectrum embraced the Grid's bi-directional communications capabilities to enhance services for ambulatory providers with web-based laboratory and radiology order-entry and management as well as reference lab integration via the Novo Grid technology. Spectrum has also deployed admission notifications, including inpatient, emergency and urgent care visits.

To accommodate the multiple care locations and diverse levels of technology maturity that exist across the health system, Spectrum was able to leverage the Medicity technology *using the same data feed* to provide information via the web and via auto-print to paper-based physician offices—while offering discrete data integration with a myriad of EHRs to providers who were farther along the adoption curve and had successfully automated their practice and clinical workflow.

Results. As of February 2010, Spectrum has deployed the Grid to more than 800 physicians in 12 counties across more than 100 practices. Over 80 of these practices—representing more than 400 physicians—have been able to turn their faxes off completely. This has had a significant impact on workflow, operating costs and improved relationships with physicians.

By providing an order-entry solution and reference lab integration, Spectrum has increased its market competitiveness, increased referrals and enhanced revenue. Spectrum is in the process of deploying to another 70 offices representing almost 250 physicians. Spectrum is letting the physician offices guide deployment and determine which components of the Grid technology they want to implement. This means that physicians are able to deploy the services they want and not those they don't need, creating improved buy-in and adoption from the provider community.

With the Grid, Spectrum Health was able to address its business needs, improve relationships with physicians, realize administrative savings and clinical benefits as well as lay a foundation for more expanded connectivity and HIE in their region. In 2009 Spectrum partnered with several competing healthcare organizations in its market—Lakeland Health System, Metro Health, Northern Michigan Regional Health System, Trinity Health—to form a *collaborative HIE,* Michigan Health Connect (MHC).

The participants of this organic HIE were all interested in results delivery, EHR integration with affiliated physician practices, and expanded connectivity as key strategic investments to significantly increase the value delivered to a broader provider community—and ultimately to improve coordination of effective and safe patient care across the region. All stakeholders participating in MHC have deployed the Novo Grid and have worked together collaboratively to integrate their Medicity solutions as a self-governed HIE.

MHC now spans 39 counties, covering more than 2.2 million people, and over 3,500 providers in a wide range of care delivery environments. MHC was able to leverage partner organizations' existing HIT investments, enabling collaborative entities to retain control of their own data but gain economies of scale in negotiating interface costs while using Medicity's Grid as a common platform to continue to integrate with partners and other HIE initiatives faster, easier and cheaper.

MHC has deployed results delivery, laboratory and radiology ordering, and EHR and reference lab interfaces to over 460 physician practices. More than 400 of those practices have been able to turn their faxes off resulting in administrative savings and improved workflow. MHC continues to expand, bringing on more collaborating organizations as well as enhancing functionality that meets the needs of its constituents.

Estimate of implementation timeline—Pilot project and broader installation

Pilot Project: Medicity's Philosophy - Start with the End in Mind

While most constituents in the healthcare ecosystem realize health information exchange is the "right thing to do," many health information organizations have struggled to define projects relative to the business aspects of HIE, including financing, sustainability and symbiotic vendor partnerships. Medicity has a detailed process in which it can assist HIEs with the identification of a meaningful business plan and sustainability model. A key component of this process is the identification of a high-value dataset and stakeholders who are ready to either contribute or consume data (or both) that can enable the health information exchange to quickly demonstrate value.

Medicity encourages SHARE to deploy a pilot project as a Proof of Concept (POC) for the Arkansas HIE that ultimately begins with the end in mind while delivering immediate stakeholder value and adhering to any specific functional capabilities that improve upon healthcare delivery. To Medicity, beginning with the end in mind means delivering a quick win while laying the framework for a successful long-term exchange using the same technology footprint that would be used in a large-scale deployment. This means that while Medicity can and will deliver a solution to quickly demonstrate a POC that proves out the concept of HIE, Medicity will also deploy the foundational platform that will scale to support the entire region and/or state. This foundation is the same that today supports other regional, state nationwide clinical data-sharing deployments.

Medicity has significant experience working with HIEs to evaluate market dynamics, regional politics, and the regional IT capabilities relative to determining an optimal starting place for an HIE. To this point, our intent with the following Proof of Concept commentary is to not only outline what we can deliver in order to offer early functional and technical milestones of a pilot, but to also highlight the importance of the Arkansas HIE's early scope decisions relative to an HIE's overall value proposition. SHARE's decisions for the HIE affects the groundwork, planning, and positioning for the overall HIE strategy. As a key component of our partnership approach, we suggest Medicity work shoulder-to-shoulder with the Arkansas HIE stakeholders to both define and deliver a POC project that delivers upon the objectives of its local stakeholders yet has a larger purpose and plan in mind—*a valuable, sustainable and adopted statewide HIE.*

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Overview of Arkansas Proof of Concept Approach. For the health providers of Arkansas, our approach offers a paradigm of removing data silos and replacing them with a platform that supports data exchange and aggregation—retrievable and available anywhere and anytime—including in times of emergency or disaster. The objective of our POC response is to present the SHARE with POC options and phases that have been deployed by HIEs around the country. It is also our experience that one size does not fit all, and it will require collaboration, analysis, and communication on the part of the proposed team and Arkansas stakeholders to ultimately define the optimal HIE project plan and phased approach for the Arkansas HIE.

Broader Installation. Medicity provides complete implementation services. Each project is lead by an experienced Medicity Project Manager who oversees the phases of the project from initiation through software development or modification, data migration, interface development, etc. to 'go-live.'

Implementation requires participation of technical and non-technical staff from both the client and Medicity. The overall work effort is guided by the Medicity Project Manager. Medicity fully supports the implementation process. The following represent the major phases of the implementation process.

- *Project Initiation.*
- *Configuring Application Software.*
- *Data Migration.*
- *Interface Development*
- *System Build.*
- *System Development*
- *System Testing.*
- *Training Users.*
- *System Integration.*
- *System Installation and Testing.*
- *System Acceptance.*
- *Go-live Requirements.*
- *Implementation Timeframes*.

One of the most significant value propositions of this proposal is the significant and rapid return-on-investment that can be achieved using the Grid. Most hospitals are facing economic pressure and cannot afford to lose referrals to national reference labs, local imaging centers, competing acute facilities and other competitors. In fact, strategies must be pursued that increase revenue as quickly as possible. Because the Grid requires a small hardware footprint, minimal IT and project management resources, it can be installed rapidly.

Once installed, information can be delivered to paper-based practices via the Grid in a matter of hours and to EMR-based practices in a matter of days—providing information delivery in less than two minutes that is customized to that physician practice's preferences. No more unwanted duplicates or preliminary reports. Information is printed in alphabetical order for rapid filing. Multiple test results from a single order are grouped together.

Below is sample implementation timeline for a HIE deployment.

PHASE 1-2 Implementation Timeline (ProAccess) — RHIO

Phase 1 Objectives:
1. Assess Data Sources and Determine Source Readiness
2. Acquire Data from Host Systems
3. Integration Specification
4. Define/Validate/Revise CMPI Matching Rules
5. Integration Development and ProAccess Installation
6. Go Live with Phase 1 Data Sources

Phase 2 Objectives:
1. Acquire Data from Additional Host Systems
2. Integration Specification
3. Validate/Revise CMPI Matching Rules
4. Integration Development
5. Go Live with Phase 2 Data Sources

| Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 |

Phase 1 Kickoff — A
Data Assessment & Integration — B
ProAccess/Integration/ CMPI Config — C
Phase 2 Kickoff — A
Data Assessment & Integration — B
Integration Config — C
Client Certification
Client Certification — D
ProAccess Rollout — D
Rollout

System Support / Maintenance

LEGEND:
Medicity Resource
Client Resource

Phase Activities

A — Assessment
Interface Assessment
Product Configuration
Workflow Requirements
CMPI Matching Criteria

B — Plan and Design
Hardware Installation
Interface Configuration
Software Configuration
EMPI Algorithm Build

C — Execution
Unit/Regression Testing
Certification Build
Client Acceptance Testing
Issue Resolution

D — Monitor
User Training
Support Services
Performance Monitoring
Future Product Planning

Variables that affect the implementation timeline include adherence to project scope as defined at the initiation of the project, client personnel availability, "buy in of potential participant," governmental regulation changes and "Acts of God." Through our extensive implementation experience, well-defined implementation process and our skilled project management personnel, Medicity can mitigate most of the events that may affect timely implementation.

Description of the Financial Business Models supported.

Medicity can work closely with Arkansas HIE to help design and develop a business and financial model that will ensure sustainability. Medicity has a history of working closely with HIE clients to determine which business model is best-suited to the client. Once the business plan is outlined and agreed upon, Medicity will work with Arkansas HIE to implement the plan, including but not limited to supporting the development activity to obtain commitment of additional stakeholders to the model, and once commitment is secured, bringing any financing necessary to the table to ensure its success. As an example, Medicity has been involved in developing and/or refining distinct business/financial models for the Delaware Health Information Network (DHIN), OCPRHIO, and most recently MSCHIE.

Suggested Service Level Agreement terms.

Please see the sample service level agreement provided in the Addenda.

Estimated Cost of Solution Components, including license fees, third-party license fees, hardware (server and storage), and recurring maintenance fees.

Sample Pricing as defined in the description column   (Pricing is list price with no discounts applied or negotiated)

Medicity has priced this as a sample healthcare system that (could) be part of the Arkansas HIE.

Description	One-time Fees
5 Large Hospitals (500 Beds each = 2,500+ Beds) **This Software as a Service fee includes the following:** • **(**ProAccess PCS Community Health Record • MediTrust, Community Master Person Index (CMPI) • Medicity Grid Infrastructure • Record Locater Service (RLS) • Nexus Interface manager. • Security Framework • Consent Framework • Data repositories for 5 contributing organizations (additional see below) • CCR/CCD exchange and storage in the community HIE • Hardware for the 5 contributing organizations (High Availability) • Implementation Services for the 5 contributing organizations to include the following services: o Project Management o Quality Assurance and Testing o Training Services (Train the Trainer) o System Test and Acceptance o Software install and configuration o Arkansas HIE branding of Community Software o Project plan development and management o Scope of work development and acceptance **(Payment terms for these fees are negotiable based upon Arkansas HIE implementation plan and strategy for role out of the HIE)**	$1,766,714
Interfaces for the 5 Hospitals (assumed 4 data types per hospital) • Laboratory, Radiology, ADT, Transcription $12,000 X 20 interfaces =	**$240,000**
Interfaces to 3 EMR systems • Interface fee for any EMR on the Medicity interface list $1,500/instance x 3 =	**$4,500**

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Description	One-time Fees
MPI Harmonization (per data repository) • If all 5 hospitals share the same data repository $11,000 X 1 data repository = • If each hospital prefers a separate data repository $11,000 X 5 data repositories =	$11,000 **$55,000**
1 Ambulance service • EMR Interface assuming (1) EMR system (bi-directional interface) • Provider portal for 20 ambulance physicians	**$3,500** **Included**

Description	Ongoing Fees:
ProAccess PCS Community Health Record • Provider Portal for 150 physicians x 5 Hospitals = • eRX for 150 physicians per each hospital = $25/physician/mo X 750 physicians =	**Included** **$18,750/mo**.
2 Large Clinics • ProAccess PCS Community Health Record—Provider Portal for 200 Physicians • eRX for 200 physicians X $25/physician/mo. =	**Included** **$5,000/mo.**
Medication History • Non ePrescribing fees • * Medicity has been successful negotiating fixed fees at the State level	**Fixed annual fee or $3.00/query***
Software as a Service (SaaS) • Includes the following: 5 hospitals 500 + beds each- 750 physicians, 2 large clinics—200 physicians and 1 ambulance service—20 physicians	**$305,714/yr.** **(Annually upon live Production)**
Medicity Managed Data Center Hosting (High Availability) • Hosting for: 5 hospitals 500 + beds each- 750 physicians, 2 large clinics—200 physicians and 1 ambulance service—20 physicians	**$217,594/yr.**

M E D I C I T Y

Summary of fees:

Description	Year 1 Fees:
One Time fees (5 Large Hospitals (500 Beds each = 2,500+ Beds)	$1,766,714
Interfaces for the 5 Hospitals (assumed 4 data types per hospital)	$240,000
Interfaces to 3 EMR systems	$4,500
MPI Harmonization (per data repository)—assumed 5	$55,000
1 Ambulance service—bi-direction interface	$3,500
Total Year 1 fees	**$2,069,714**

Description	Ongoing Fees:
eRX for 150 physicians per each hospital = $25/physician/mo X 750 physicians = $18,750/mo	$225,000/yr
eRX for 200 physicians X $25/physician/mo. = $5,000/mo	$60,000/yr
Software as a Service (SaaS)	$305,714/yr
Medicity Managed Data Center Hosting (High Availability)	$217,594/yr
Total on-going fees	**$808,308/yr**

General Solution Description

Interoperability

Medicity's approach, technology, and experience in building and deploying a large scale, dynamic HIE platform that is capable of addressing today's needs and evolving to enable tomorrow's vision of an interconnected healthcare community differentiates us from other solutions.

From our review of the RFI, we understand the primary focus to be the following:

1. Facilitate the development of a state HIE among clinicians, citizens, public health entities, payers and other organizations within the state of Arkansas.
2. Support Meaningful use adoption
3. Seamless interoperability with existing systems
4. Roadmap for increasing functionality and information exchange.

As health care organizations across the country are investigating many options pertaining to health information exchange as they seek to satisfy the requirements for Meaningful Use and proactively prepare for new reimbursement models (e.g. bundled payments) and care delivery models (e.g. Accountable Care Organizations, Patient Centered Medical Homes), Medicity has developed an approach that has been proven over many years in the HIE marketplace across the largest connected network of providers—spanning hundreds of hospitals, thousands of physician practices and tens of thousands of physicians. Our approach, technology and experience differentiate Medicity from other solutions in deploying a scalable, secure and dynamic HIE platform that is capable of addressing today's needs and evolving to enable tomorrow's vision of an interconnected healthcare community locally, regionally, at the state level and ultimately across the country.

Medicity has found that the best way to build an HIE is in an incremental fashion, taking a "bottom-up" approach. We start by focusing on automating core healthcare transactions like ordering and resulting tests, referring patients between providers, and coordinating information between care teams. In accomplishing this critical step, the platform would connect hospital systems, EHRs, PM systems, labs and others in such a way that information is "liquefied" to flow across the HIE. This critical step also creates immediate value for the providers that use the HIE by reducing labor, increasing information quality and timeliness, and user satisfaction.

As the HIE grows from the bottom-up and more and more connections come online, the HIE can begin the process of building the backbone. This includes building data collection points across the HIE to stage information for use, standing up community MPI and record locator services to aggregate information and reconcile patient identity across a community, establishing community health records and registries to enable access to and analysis of information, and establishing gateway services to exchange information with external networks like the NHIN and other HIEs as well as public health agencies.

The Medicity approach has proven successful in a wide variety of HIE environments—hospitals, health systems and RHIOs.   Additionally, healthcare systems across the country have deployed our unique technology, creating local grids that connect affiliated and non-affiliated providers to exchange information in communities across their respective markets, without third-party governance organizations in place, as more of an "organic" or "collaborative" HIE.

By delivering immediate value to HIE participants by automating clinical messaging and workflow, then building upon that with higher level services that provide greater value over time, the Medicity approach offers hospitals, health systems and HIEs the ability to create a "utility" for publishing and consuming health information across their market in an incremental manner.

Technically, the Medicity architecture blends two models to meet the needs of healthcare communities—a distributed computing system that uses intelligent agents operating in an agent-grid, and service oriented components to build the HIE backbone for higher level exchanges (e.g. NHIN participation).

The diagram below provides a sample overview of the Medicity platform. (Vendor names shown are for example only. Medicity has worked with more 150 vendor systems.)

Sample Medicity HIE Platform
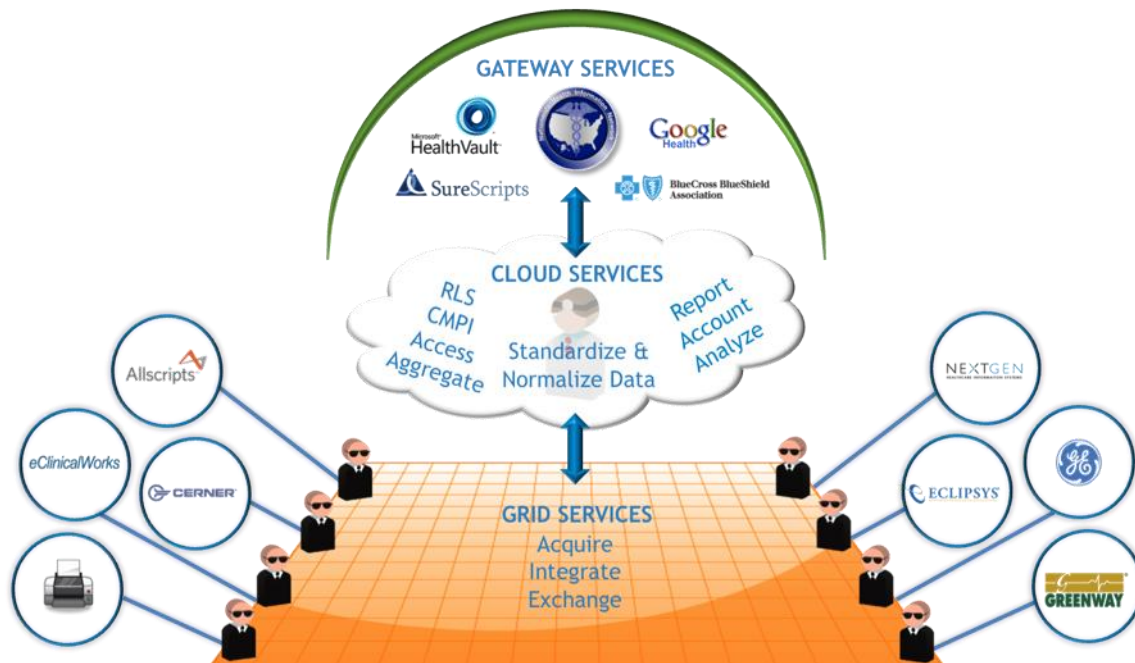
Our foundation is Medicity's Novo Grid, a distributed, agent-based system that offers unique capabilities to provide "last mile" connectivity and clinical messaging. Agents are small, intelligent, adaptive software programs that can be quickly deployed to locations across the community (hospitals, physician practices, clinics, extended care facilities, etc.). They operate on the organization's local network and

interface directly to local applications such as a hospital information system and EHRs, printers, and other computer/office equipment.

Agents perform workflow tasks. As they acquire information from local systems, they apply rules to determine actions to take. Agents have the intelligence to transform information, map it to different values, filter, and copy data to other agents over the Grid.

Agents exchange information using a secure asynchronous messaging protocol that is designed to "push" information securely over the Internet in a manner similar to secure email. This approach is highly effective in a distributed world of disparate systems like that found in healthcare. As a result, providers with EHRs leverage the Grid to receive information directly into their patient charts, to capture orders and referrals and deliver them to the appropriate service provider, or to "scan" the EHR for information and distribute it to other providers or registries based on the context of the information (consent, need to know, etc.).

Agents are able to automate a wide variety of exchanges designed to provide clinical message automation and meet Meaningful Use criteria. As the agents manage the exchange of core transactions (orders, results, referrals, admissions, transfers, etc.), they become ideal mechanisms to feed higher level HIE functions such as aggregation, standardization, and reconciliation.

Medicity SOA services are provided to further process information to the degree necessary for HIE exchange, aggregation and consumption. For example, agents can acquire information and utilize the services to improve the quality of data for access and analytics purposes. SOA services include functions, such as:

1. Vocabulary standardization (e.g. proprietary lab term to LOINC)
2. Format standardizing (e.g. multiple HL7 messages into a single CCD)
3. Anonymization Services to de-personalize and re-identify data
4. Identity, relationship, and consent services.

This enables information to be prepared for use in HIE functions such as aggregating data for standardized queries (e.g. PIX/PDQ) that return formatted responses (e.g. CCD), or distributing information to local, state and national registries, filtered and formatted to match the needs of each specific registry (e.g. immunization, cancer research, Meaningful Use quality reporting, performance metrics, etc.). As information is aggregated, it is linked through Record Locator and Identity Management services (MPI), to provide a single, longitudinal view of patient information across the HIE.

Medicity delivers the ability to create a composite EHR from a variety of application modules that are applicable in both enterprise and community settings. Functionality includes elements like e-Prescribing, e-Signature, and clinical modules for problem, allergy and medication lists, claims history and other functions. The Medicity environment can be applied to create a summary view of data with comprehensive security access mechanisms and audits - to ensure only those with the right to see data can access the data. For unique cases such as with first responders and emergency room physicians that need consolidated, summary information at their finger tips, the Medicity system offers a high degree of

security to enable "break glass" functionality that enables limited access while auditing the event to ensure all privacy rules are enforced.

An important facet of the Grid is the ability to share and synchronize information about specific patients in private, Grid-based social networks. This allows providers to "see" what other members of the care team are doing with the patient. As a social network, only the members of the care team share the patient data, leveraging the agents to keep the providers in sync (with and without an EHR).
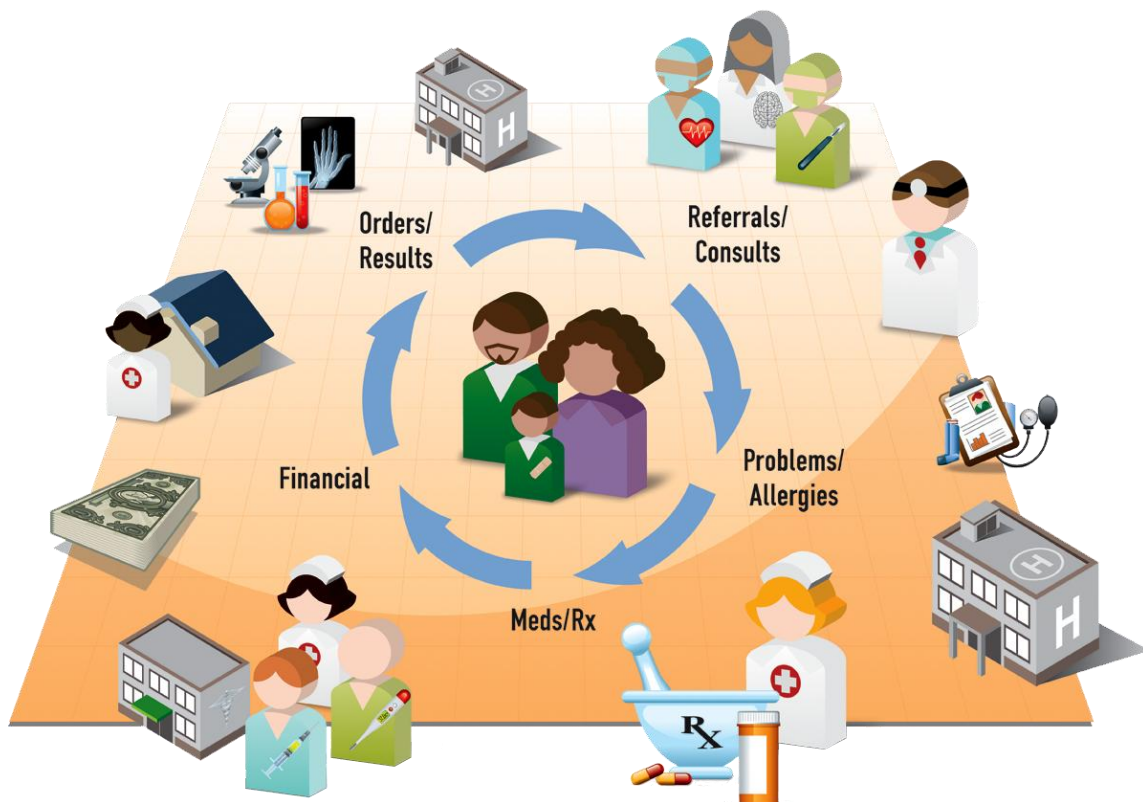
Agents collaborating in a Grid social network are well suited to support collaborative networks, such as Patient Centered Medical Homes (PCMH) and Accountable Care Organizations (ACO) where a diverse group of providers are linked to a common patient for the delivery of care.

As distributed interface/workflow engines, agents can easily copy information to other locations based on rules and programmed behavior. They can populate HIE data stages, registries, clinical research databases, PHRs, bio-surveillance databases and other data receivers as required. This approach makes the cost of data acquisition extremely low, effectively provided as a by-product of the primary data exchange (e.g. delivering patient test results). Because agents are encountering information in real-time with sophisticated rules capability, they are also ideal technologies to enable public health alerts and reporting.

In addition to the HIE backbone services to aggregate and present information, Medicity's architecture also incorporates a suite of gateways services that allow information to be queried from outside sources

(e.g. from the NHIN using PIX/PDQ queries), or to deliver information to specific sources like commercial PHRs (e.g. Microsoft Health Vault and Google Health), payers, and others. This requires the underlying features of the Medicity architecture such as the agent Grid to acquire data, services to standardize the information acquired, and gateway services to deliver the newly standardized data to a destination or queue it for later queries.

As usage increases, new services can be introduced to create more functions to better achieve Meaningful Use. Concurrently, the health system can work with a state to begin building the services that will form the HIE backbone to bridge regional Grids and establish the elements needed for exchange with the NHIN, patient registries and a modular health record that enables e-Prescribing, aggregated patient data (e.g. problems, allergies, and medication lists), quality reporting and other required functions.

The final aspect of the Medicity approach is based on our experience in deploying large, state-wide HIEs and highly functional community HIEs (often built around hospital systems) in some of the most complicated environments in healthcare. This has enabled us to grow our resources to adapt and interoperate with a wide array of products and solutions on the market including hospital systems (lab, radiology, financial, etc.), EHRs, and others. This is critical to success because the reality is that today's environment does not adhere to any specific standard or approach. As a result, many systems require knowledge and skills at creating interoperability that is only gained through experience.

Our service and support organization has evolved from supporting large scale initiatives like managing the Web presence of one of the largest national reference labs and the nation's first state-wide HIE. As our footprint has grown, our service teams have gained experience in interfacing the widest array of EHRs and other applications.

As a result, Medicity is well suited to helping clients achieve their goals of creating HIEs across their markets that connect seamlessly to the NHIN and other national networks and systems in an incremental, natural manner.

Medicity has provided a sample price range for our solution due to our limited knowledge of the deployment priorities and scope for the Arkansas HIE other than those expressed in the RFP. Based on our extensive experience deploying HIE solutions nationwide, there are multiple ways to solve similar business and technological challenges, depending on goal timeframes for deployment and stakeholders to be included in various stages in the process. It is our experience that a "crawl-walk-run" approach to a community HIE project yields greatest success and project costs incrementally grow as opposed to large expenses upfront.

Technical Architecture and Approach

1. **Secure privacy:**

Medicity employs sophisticated and stringent security measures to ensure that its solutions both contribute to building trust among all entities that use its technology and strictly adhere to HIPAA security requirements. Measures Medicity employs to protect the confidentiality and integrity of data include:

Authentication and Authorization. Users are identified by user ID, classified by type, and authenticated with a password and an optional second factor such as token-based authentication.

Relationship-based Access. Data is routed to a physician based on that physician's relationship to the patient. For example, if the physician is the ordering provider or the attending physician as noted in the HL7 data, that result or report will be routed to that physician. Role-based security measures (described below) ensure that each organization can also specify staff's relationship to a physician, thus allowing the applicable personnel to access the information they need to perform their jobs.

Role-based Access. A physician or staff member's level of access to a patient's clinical data in ProAccess is determined by their role in the organization and their relationship to the patient. Our access model relies upon a combination of controlled user access driven by rules and organizational roles which can be configured by department. Maintenance and oversight can be centralized or delegated to authorized departmental administrators.

ProAccess distinguishes two main groups of users: providers and staff. Providers are granted access to data based on their relationship to the data. Staff is granted access based on their relationship to the provider.

Users are granted access to patient information based on organizational and individual-user maintenance settings. Areas of control include:

- Which patients can be accessed
- Data from what type of visit or encounter can be accessed
- Whether VIP or employee information can be accessed
- What types of clinical data are available to the user
- What features of the application are available to the user

Break-glass Access. Medicity's ProAccess Application features a break-glass function in which a user who does not have a relationship with a patient can view the records but must "break the glass" and give a reason for doing so. When breaking glass, users are warned that their actions are being monitored and documented, and they must provide a reason for breaking the glass. The client is then able to run a report to see what users have broken the glass and the reasons why.

Patient Consent. Patient consent is a critical component in ensuring patient privacy in an HIE implementation, enabling patients to retain control over who can access their private and sensitive medical information. Once the exchange's governing body and primary stakeholders determine policies

regarding informed consent, Medicity supports them with its software. Medicity supports both opt-in and opt-out models.

Medicity's solution allows patients to authorize access to their medical records at both the provider and data type levels. The patient may choose to only allow certain providers access their data or they may restrict certain types of data from being viewed.

Network Security. Medicity protects against external breaches by maintaining perimeter firewalls, IDS solutions and 24x7 monitoring through our network operations center (NOC).

Medicity deploys firewalls using industry standard methods for securing a publicly available application, including creating a DMZ for web servers, firewall rules, port exclusions, protocol filters and IP restrictions. These devices, once configured, protect the network from denial of service attacks, port scanning and other internet-related attacks. In addition, the use of IP restrictions provides the ability to refuse traffic from any network based on geographic location.

Data Center Security. When Medicity hosts for a client, it ensures confidentiality of data and high availability of its system through a number of security measures. The data center facility that houses Medicity's production hosting platform is a SAS70 type II certified facility, which is secured by biometric and proximity card readers at all points of ingress and egress. All of the physical plant components are N+1, including power distribution units, UPS, and backup generators. There are two discrete power feeds from the local utility sourcing from the main power production facility. Fire suppression consists of a three-stage zoned system that has an early-warning particulate sensing system, which senses the presence of smoke prior to flash point. All Tier I bandwidth providers are present within the facility and are brought into the demarcation point via redundant fiber ring connections.

2. **Improve the health care delivery:**

Medicity understands the need to effectively communicate information to providers regardless of the widely varied technological maturity of the physician and overall healthcare community. With that in mind, Medicity accommodates a wide variety of delivery preferences so the HIE can always provide information when and where it is needed. Providers can choose how they receive results whether to: secure inboxes, directly to physician office EMRs, via paper, or electronically to a printer (auto-print).

In addition, the web-based ProAccess Application acts as a dynamic, real-time message center for receiving, viewing, and managing current clinical information transmitted from disparate clinical systems, which is useful for physicians who do not yet have an EMR and/or need access to clinical information away from their office.

3. **Best practices and standards:**

Medicity provides a reference architecture for each client that details the optimal hardware and software configuration that Medicity recommends. This architecture serves as a starting point for discussions with the client. Our reference architecture and its deployment incorporate best practices on horizontal and vertical scalability, network configurations, high availability, fault tolerance, database clustering, and disaster recovery.

In addition, Medicity employs best practices for HIE network security. Connections to third parties, such as clients and vendors, are required to be completed across a VPN tunnel and are limited via access control lists (ACLs) to specific hosts within the organizations. In addition to encrypted channels, a network of trust is established, driven off of a PKI infrastructure. Furthermore, we comply with NHIN messaging guidelines for X.509 digital certificate signing of all XML-based transactions. Intrusion Detection Software (IDS) is configured within the Medicity environment to detect any malicious traffic across the networks.

4. NHIN standards:

As health information exchanges (HIEs) proliferate in communities, regions, and states throughout the nation, the need to ensure integration and collaboration among them is paramount. On a national level, the National Health Information Network (NHIN) is the principal endeavor designed to develop and test standards and protocols that ensure successful exchange of information among HIEs nationwide. Medicity is actively engaged in the NHIN/HITSP process—fulfilling use cases, writing protocols, and participating in workgroups—giving us unique insight into the exchange process and a head-start on supporting future interoperability standards. Medicity's NHIN/HIE Gateway connects an HIE to any other HIE—promoting true, connected healthcare for care collaboration locally, regionally, statewide and across the nation.

Medicity's solution supports all accepted industry standards for the electronic exchange of healthcare information, including the current and emerging HIE-to-HIE interoperability standards. The Medicity solution is fully compliant with all applicable NHIN compatibility standards. Our team is actively engaged in the NHIN/HITSP process, which enables us to understand what the latest recognized interoperability standards mean to our product line and gives us a head start on product development to support future standards.

Medicity employees currently participate on the NHIN standards definition work groups, tasked with the goal of harmonizing and integrating interoperability standards among healthcare organizations and systems. While demonstrating Lab and Biosurveillance use cases during the NHIN trial implementation, Medicity showed it supports both current and emerging technical messaging and security standards for secure HIE-to-HIE exchange, including: core Microsoft-certified web service extensions, X.509 Certificate Token, SAML, and SOAP message security.

During 2009 Medicity was and continues to be under contract with the Office of the National Chairman (ONC) to participate in the NHIN Cooperative, serving on many committees and cross functional teams. During 2009, Medicity actively participated in the following NHIN Workgroups:

- NHIN Cooperative Leadership
- NHIN Specifications Factory (Profile, Privacy, Messaging and other Sub Teams)
- NHIN Operating Policy and Procedure
- NHIN Architecture and Implementation Guidance
- NHIN Test Infrastructure
- CONNECT Code-A-Thon Participation

As part of our NHIN participation, Medicity has been instrumental in playing a leading role in the development of the following NHIN documents:

- Founding members of the new HITSP Consumer Preferences Tiger Team
- Lead author of the new x.509 Messaging Platform Public Key Infrastructure certificate revocation text
- Coauthored the Patient Discovery Service Interface Specification
- Coauthored Breach Discovery and Notification document
- Contributor to the NHIN Architectural Overview document
- Participated in the creation of new versions of several specifications:
- Query for Documents Services Interface Specification
- Retrieve Documents Service Interface Specification
- Messaging Platform Service Interface Specification

Medicity is currently in the process of contracting with the NHIN to participate in one of the NHIN Emergent Extension Projects.

5. Leverage existing sources of health information:

Medicity's recommended HIE hybrid architecture leverages existing sources of health information. This architecture uses a data repository (or edge server) for each data participant and implements a Record Locator Service (RLS) to query those data repositories and return a complete and consolidated patient record. This hybrid or confederated model is useful for the HIE as it grows and prepares to participate with other regional or national HIE initiatives. As the HIE initiative expands to include other healthcare organizations, new participants may not want to commingle their data in another organization's centralized data repository. Medicity can easily accommodate these participants by providing each data contributor (or group of contributors) with a separate data repository.

In addition, Medicity's Collaborative Care Suite incorporates a suite of Gateway Services that enable information queries to outside data sources and the publishing of information to specific sources like registries, other HIEs and RHIOs, and commercial PHRs.

- *Registry Gateway*. Medicity leverages its technologies to provide an infrastructure that assists this process. Our Registry Gateway connects with any local, state, or national registry—while our Data Services filter and format the information to meet the specifications required of the specific registry.
- *NHIN/HIE Gateway.* . Our NHIN/HIE Gateway connects an HIE to any other HIE—promoting true, connected healthcare for care collaboration locally, regionally, statewide and across the nation.
- *PHR Gateway.* Medicity technology engages patients in care by creating a PHR Gateway between HIEs, hospitals, and the patient's chosen PHR network or application—ensuring that all relevant and authorized information is available to the patient. The PHR Gateway provides connections to any third-party personal health record, including Google Health and Microsoft HealthVault. Our gateway is flexible to expand into other emerging PHR networks, such as payer- and employer-sponsored PHR initiatives, and to integrate with hospital- and practice-based patient portals.

6. Incremental deployment:

Medicity's HIE solution is highly scalable and easily accommodates the addition of technical users and feeder systems. The scalability of Medicity's solution supports an incremental deployment process and the addition of new HIE participants. The various components of the application can be scaled throughout the implementation phases, and, as utilization increases, the platform can be scaled at the server level both horizontally and vertically to handle the increased load without disrupting the existing environment.

There are no limitations to the number of named users within the product. Additionally, there are no application or hardware limitations for the number of concurrent users that the system can support. As the limits of existing hardware are reached, additional servers can be added to spread the load and scale the system.

Historically, once the HIE infrastructure is in place, adding like partners to an existing health information network is a straightforward process that takes approximately 6 months. The timeframe depends heavily on the following variables:

a. The number of interfaces to be added
b. The data provider's ability to support the co-development of integration specifications
c. The data provider's ability to provide sample HL7 messages at the time of project kickoff. Delays occur if the data provider must have a new outbound interface developed to provide data to the HIE.

This estimate takes into account that the necessary negotiation of business rules and business partner agreements are in place between the new partner and the HIE.

A breakdown of the implementation tasks are as follows (for an average hospital with six interfaces—ADT, LAB, RAD, PATH, TRANSCRIPTION and PACS):

a. Educate new data provider on ProAccess—1 week
b. Develop, QA, and finalize integration specifications, code sets, patient matching algorithms, etc.—8 weeks
c. Code interfaces and complete internal end-to-end QA testing—8 weeks
d. Client product and interface certification testing—6 weeks
e. Production deployment—1 week
f. Total: 24 weeks or 6 months.

Medicity can support the on-boarding of multiple new data providers at one time.

Without specific information about a participant's environment and expansion plans, Medicity cannot respond specifically to the incremental costs associated with a participant's technical infrastructure, operational and service fee implications. We will work with the HIE to define a menu of expansion service packages to offer new participants of the HIE. We can support several fee models including transaction-based, subscription, perpetual and hybrid's thereof to support your HIE expansion efforts.

While Medicity's platform is scalable and has been deployed state-wide and nationally, increased hardware and/or managed data center requirements are based on volume of data being managed by the Medicity platform. Medicity will work with the HIE to ensure hardware is deployed incrementally while ensuring system performance.

7. Proof of Concept:

Medicity's approach offers a paradigm of removing data silos and replacing them with a platform that supports data exchange and aggregation—retrievable and available anywhere and anytime—including in times of emergency or disaster. The objective of our POC response is to present the SHARE with POC options and phases that have been deployed by HIEs around the country. It is also our experience that one size does not fit all, and it will require collaboration, analysis, and communication on the part of the proposed team and Arkansas HIE stakeholders to ultimately define the optimal HIE project plan and phased approach for SHARE. Medicity understands the importance of a phased implementation that manages stakeholder expectations while delivering a scope that makes sense, delivers early value, drives HIE adoption by providers, and lays the foundation for additional features, functions, and data sets.

8. Messaging infrastructure with guaranteed, secure information delivery:

Medicity's Novo Grid software enables the secure exchange over the Internet and integration of information between healthcare community providers such as hospital systems, ancillary providers and physician practices. Medicity Agents provide dramatic improvements in information exchange and collaboration for all physicians in the community—whether they are paper-based or use an EMR. *Agents are essentially intelligent "robots" that are easily installed in the hospital and each practice to manage the exchange of information according to hospital and practice requirements.*

Agents use the Grid to securely exchange information with other Agents in a private community over the Internet—but without the effort and expense required to build point-to-point interfaces and complex security infrastructures.

Agents collaborate via the Grid to determine what information is to be shared. Results, reports and face sheets can be delivered from the hospital to physician practices; physicians can place hospital orders and exchange referrals with other physicians. Agents are continually evolving to allow exchange with a wide variety of other community participants. Agents are intelligent and can be easily configured through a simple interface to deliver only information the practice desires, dramatically reducing unneeded transactions. Unlike point-to-point interfaces, Agents can interact with people or computers in various ways. Agents can improve information exchange with every physician practice in the community, whether they are paper-based or using an EMR.

For practices that are paper-based, Agents deliver filtered transactions to a work list in the practice. Office staff can easily interact with the Agent to print the specific information they require with minimal effort. For practices that have EMRs or that use document management systems, the Agent can deliver information as HL7 transactions, Adobe .pdf documents or in other formats as needed.

Perhaps most importantly, Medicity provides all the technical expertise required to manage these interfaces, freeing hospital staff from having to develop relationships and expertise for every EMR system in the physician community.
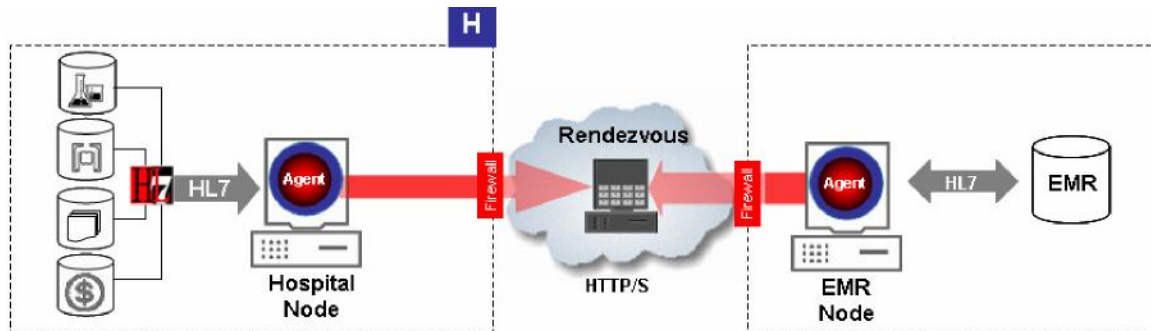
Grid Security. The Agent Grid/iNexx platform employs the concept of Nodes which house Agents deployed across the Grid. Nodes generate 2048-bit RSA public/private key pairs when initially installed. The Private Key is kept by the Node and the Public Key is distributed to all Nodes participating on the Grid. Nodes employ a unique way of encrypting information and sharing keys using both symmetric and asymmetric key technologies. Payloads are encrypted with randomly generated 2048-bit AES symmetric keys.

ProAccess. The ProAccess Clinical Inbox is presented to the viewer at login. The inbox acts as a dynamic, secure real-time message center for receiving, viewing, and managing current clinical information transmitted from disparate clinical systems.

ProAccess Message Transmission Security.

○ *Source System Security.* Messages received from foreign systems are transmitted via a private LAN link or an encrypted link.

○ *Receiving System Security.* All receiving systems such as ProAccess, AutoPrint, and EMRs utilize SSL 128-bit encryption to guarantee message security.

Design Principles and Requirements

1. Vendor neutral:

Medicity's solution is vendor-neutral. In partnership with our clients, Medicity has integrated with more than 50 unique EMR/EHR applications (including those listed above). Medicity is confident we can integrate with any standard EHR solution on the market today.

In addition, we have developed over 1250 unique applications interfaces (covering almost every type of HIS interface, including ADT, radiology, pathology, transcription, PACS and billing) for more than 150 third party vendors.

Medicity has successfully integrated with patient management systems, clinical systems and EMRs from every major vendor. Our breadth and depth of integration experience makes Medicity a leader in the integration of systems for the secure exchange of healthcare information. Please refer to the Addenda for the list of vendors and products with which Medicity has integrated.

2. Rely upon a network:

Medicity's network architecture provides an efficient, scalable de-centralized connectivity model used to create a private and secure exchange network. The architecture is comprised of several very important layers:

Novo Grid—designed to achieve levels of exchange and interoperability that are difficult, if not impossible to achieve using conventional approaches. Medicity's Novo Grid is formed through installed Agents in many different locations that provide local connectivity services—i.e., EMRs, PMS systems and Print Devices, while coordinating access to MediTrust Cloud Services outside of the practice and/or clinic.

MediTrust Cloud Services—designed to reduce the total cost of ownership (TCO) for the overall HIE community by service enabling the most re-usable and logical capabilities—i.e., Patient Consent Framework, Community MPI, Record Locator Service, Reference Terminology Service (RTS), data repositories, etc. Grid Agents are pre-configured to interoperate with MediTrust Cloud Services and a software development kit (SDK) is available for third party systems to integrate with the services.

Gateway Services—part of the MediTrust Cloud Services, Gateway Services are designed to package and share common services across communities across the country—i.e., Medication History, National Reference Labs, PHR Networks, NHIN connectivity, etc.

M E D I C I T Y

The table below provides an overview of each key layer of the architecture, its deployment mode, platform and capabilities.

Layer	Deployment	Capabilities	Platform
Novo Grid	De-centralized	- PCMH Coordination - Data Distribution to EMR, PMS and Print Devices - Ambulatory CPOE - Referrals - Clinical Messaging	J2EE
MediTrust Cloud Services	Centralized	- Community Health Record (Portal) - Community Identity Management - CMPI, EMPI, RLS, Patient Consent - Data Integration—Source System Adaptors, Reference Terminology Service, - Public Health and State Agency Integration - Hybrid Data Architecture—multi-Data Stages - Community Analytics—Chronic Condition Mgmt for Diabetes, CHF, Cancer, etc. - Clinical Decision Support	Web Services .NET
Gateway Services (part of MediTrust Cloud Services)	De-centralized	- NHIN Connectivity - National Reference Lab Connectivity - Medication History - PHR Network Connectivity	Web Services .NET and J2EE

Note: Audit and Logging is implemented at every layer of the architecture, but is centrally aggregated for administrative purposes from all of the connected parties in the HIE.

3. "Hybrid" architecture:

Medicity has the capability to implement a centralized, federated, or hybrid architecture. For community health-information-exchange initiatives, generally, Medicity recommends hybrid architecture. This architecture involves configuring a data repository (or edge server) for each data participant and implementing a Record Locator Service (RLS) to query those data repositories and return a complete and consolidated patient record.

This hybrid model is desirable for a variety of reasons. Organizations are able to maintain custodianship of their patients' data. In addition, the framework does not dictate the replacement of existing health information exchange infrastructure. Rather, Medicity's product interfaces with and supplements existing systems to provide interoperability.

The hybrid architecture allows patient data to be retrieved efficiently while ensuring that health information is safeguarded according to the custodial organization's policies. Each organization can assert its own security policies for all data it contributes. For example, the participant can use the data repository to tag all lab results for STDs as confidential, which then requires a separate access right for any user wishing to view those results.

The hybrid model is useful for the HIE as it prepares for participation with other regional or national HIE initiatives. If the HIE initiative moves beyond the initial stakeholders and expands to include other healthcare organizations, new participants may not want to commingle their data in another organization's centralized data repository. Medicity can easily accommodate these participants by providing each data contributor (or group of contributors) with a separate data repository. Medicity's provides flexible options for scaling an HIE.

4. Facilitating exchange of information:

Medicity's HIE solution excels in the exchange of healthcare information. Since our solution is data and vendor 'agnostic,' we do not require a specific end user set of applications. If an end user has Internet access, Medicity can exchange secure patient demographic and clinical data. Medicity's focus is on health data exchange, as evidenced by our integration with more than 157 unique EMR/EHR applications. Medicity is confident we can integrate with any standard EHR solution on the market today.

5. Longitudinal patient record :

Medicity's Care Collaboration Suite acquires and aggregates health information across inpatient and ambulatory data stores—including physician-office applications at the point of care—to create complete longitudinal records that bridge multiple systems and care locations, all within a highly secure and scalable environment.

When providers, source systems and other data contributors send patient health information to the HIE, it is processed (validated, normalized and translated) through Medicity Data Services. Next, Medicity's Data-staging Service creates a clinical data repository (CDR), or series of repositories—according to customer requirements. Once the data is properly staged, it is ready for access by providers anytime, anywhere via the web, using Medicity's ProAccess Application.

When an authorized request for patient information is made, Medicity's Record Locator Service (RLS) queries the network of indexed data repositories for relevant data and assembles the response. Patient information is made available to authorized clinicians via Medicity's web-based ProAccess Application, which can display a patient's longitudinal health record -- which includes a patient's medical history from other systems --in a consolidated view. Authorized users can also request and view discrete clinical data for a patient from systems across multiple care locations.

6. Interoperability standards:

Medicity supports all core exchange standards on the market today, including the following key interoperability standards:

2-way SSL	IS01	T29
Attachments Profile	IS02	TN900
C19	IS03/IS05	TN901
C25	IS11	TP13
C32	MTOM	TP14
C32	RFC2246	TP20
C37	RFC2459	UDDI
C39	SAML	WS-Addressing
C87	SOAP	WSDL
DICOM	SSL 3.0 / TLS 1	WS-I Basic Profile
HL7 2.x	T14	WS-I Security Profile
HL7 3.x	T15	WS-Security
HTTP	T16	XML
IHE Audit Trail and Note Authentication (ATNA)	T17	XML Namespaces
IHE Consistent Time	T18	XML Schema
IHE Cross Enterprise Document Sharing (XDS)	T23	XML Sig
IHE Patient Identifier Cross-Reference and Patient Demographics Query for HL7v3 (PIX/PDQ/v3)	T24	XML-Sig

7. Interoperate with existing community and private health information exchanges :

Medicity's HIE solution can interoperate with existing private, local, regional and state health information exchanges, and the NHIN infrastructure as well.

Medicity's solution supports all accepted industry standards for the electronic exchange of healthcare information, including the current and emerging HIE-to-HIE interoperability standards. The Medicity solution is fully compliant with all applicable NHIN compatibility standards. Our team is actively engaged in the NHIN/HITSP process, which enables us to understand what the latest recognized interoperability standards mean to our product line and gives us a head start on product development to support future standards.

Supported IHE interoperability standards. Medicity supports the following IHE (Integrating the Healthcare Enterprise) interoperability service standards: patient search and exchange (PIX/PDQ support) services, clinical document search and exchange services (XDS/XDA), and auditing (ATNA) services.

Supported national HIE-to-HIE standards. Medicity employees currently participate on the NHIN standards definition work groups, tasked with the goal of harmonizing and integrating interoperability standards among healthcare organizations and systems. While demonstrating Lab and Biosurveillance use cases during the NHIN trial implementation, Medicity showed it supports both current and new technical messaging and security standards for secure HIE-to-HIE exchange, including: core Microsoft-certified web service extensions, X.509 Certificate Token, SAML, and SOAP message security.

During 2009, Medicity was and continues to be under contract with the Office of the National Chairman (ONC) to participate in the NHIN Cooperative, serving on many committees and cross functional teams. During 2009, Medicity actively participated in the following NHIN Workgroups:

- NHIN Cooperative Leadership
- NHIN Specifications Factory (Profile, Privacy, Messaging and other Sub Teams)
- NHIN Operating Policy and Procedure
- NHIN Architecture and Implementation Guidance
- NHIN Test Infrastructure
- CONNECT Code-A-Thon Participation

As part of our NHIN participation, Medicity has been instrumental in playing a leading role in the development of the following NHIN documents:

- Founding members of the new HITSP Consumer Preferences Tiger Team
- Lead author of the new x.509 Messaging Platform Public Key Infrastructure certificate revocation text
- Coauthored the Patient Discovery Service Interface Specification
- Coauthored Breach Discovery and Notification document
- Contributor to the NHIN Architectural Overview document
- Participated in the creation of new versions of several specifications:
- Query for Documents Services Interface Specification
- Retrieve Documents Service Interface Specification
- Messaging Platform Service Interface Specification

Medicity is currently in the process of contracting with the NHIN to participate in one of the NHIN Emergent Extension Projects.

8. Scalable and expandable:

Medicity's HIE solution is highly scalable and easily accommodates the addition of technical users and feeder systems. The scalability of Medicity's solution supports an incremental deployment process and the addition of new HIE participants. The various components of the application can be scaled throughout the implementation phases, and, as utilization increases, the platform can be scaled at the server level both horizontally and vertically to handle the increased load without disrupting the existing environment.

Medicity's Novo Grid is designed to scale in two primary ways.

- Component scaling. Because components like Novo agents, nodes, and Rendezvous are highly modular, additional components can be added to divide a large workload into manageable pieces.
- Grid scaling. Grids can be built and operated in parallel to divide large regional networks into sub-networks to distribute the load.

The Medicity Care Collaboration Suite has been designed to scale at all levels—presentation, application and database.

- The presentation layer scales through the use of load-balancing. Load-balancing directs end-user browser requests and web-service requests to servers with the least number of active connections. These devices allow the addition of web servers as needed to share the overall burden of end-user connections.
- The application servers can be partitioned as the number of contributing systems grows.
- The database servers can be partitioned to allow the system to scale horizontally when vertical limits are reached.

There are no limitations to the number of named users within the product. Additionally, there are no application or hardware limitations for the number of concurrent users that the system can support. As the limits of existing hardware are reached, additional servers can be added to spread the load and scale the system.

9. Standard security protocols:

Medicity employs industry best practices and security protocols to safeguard patient health information within the HIE. Medicity transmits clinical data using industry standard VPNs, or using MIL-quality AES 256-bit data encryption. We also use adapters to push/pull data via SFTP, and FTP over SSH. ("Plain" FTP is not supported because it is insecure.)

Data transmitted to and from the application web interface is secured by the use of 128-bit SSL utilizing whatever key strength is required by our clients, typically 1024 or better.

In addition, Medicity supports both current and new technical messaging and security standards for secure HIE-to-HIE exchange, including: core Microsoft-certified web service extensions and X.509 Certificate Tokens.

Medicity supports HITSP and IHE Federal Standards, including authentication and authorization assertions through SAML. Medicity's solution supports SAML tokens for authentication and data transmission/receipt from other HIEs.

10. Standard data storage and management protocols:

Long term vs. Short Term. Medicity stores patient clinical data in our Clinical Data Repository or data repositories. Once staged, the information is available for on-demand retrieval by authorized applications.

For longer term storage, Medicity recommends a data tiering approach utilizing fast SAN storage, less-expensive SATA/near-line storage, and offline/offsite tape storage to maintain records for the required period of time. Medicity abides by state and federal record retention requirements.

Data backup and retrieval strategy. Medicity recommends a backup and maintenance schedule that includes the use of Microsoft-certified third-party backup compression software, which reduces the size and time of the backup file.

Medicity's recommended best practices for system, application, and data backups are as follows:

- Application—One backup to tape after a given upgrade or maintenance patch. The tape is kept for at least the next two releases. Medicity recommends at least two backups to disk before backing up to tape.
- System—Client-policy specific. Medicity works with the client to determine the best policy.
- Data—Nightly full backup with five-minute transaction log backups. Standard tape rotation is based on corporate standards

The specific backup software and data recovery solution utilized varies depending on the organization's overall goals and it disaster recovery and business continuity requirements. Options range from a standard recovery solution to a complete site mirror.

11. Business continuity and disaster recovery.

Medicity's objective is to achieve the highest possible uptime and protect the organization from data-loss. Our reference architecture ensures high availability for all critical components including network connectivity. Medicity's best practices include the use of redundant network components, clustered database servers, load-balanced web and application servers, and a SAN that is designed to protect against losing any single component of the system.

Medicity works with its customers to define business continuity and disaster recovery policies that match the organization's overall goals. Based on the RTO (recovery time objective—the amount of downtime acceptable) and RPO (recovery point objective—established based on tolerance for loss of data) a collaborative solution is designed that can range from a SunGuard Recovery Solution to a complete site mirror utilizing an SRDF-type solution from EMC.

Emergency mode operation is factored into the disaster recovery solution, and may involve a backup data hosting site depending on client availability requirements. Medicity's Novo Grid employs geographically distributed nodes that provide continuous operation so cold/hot sites are not needed.
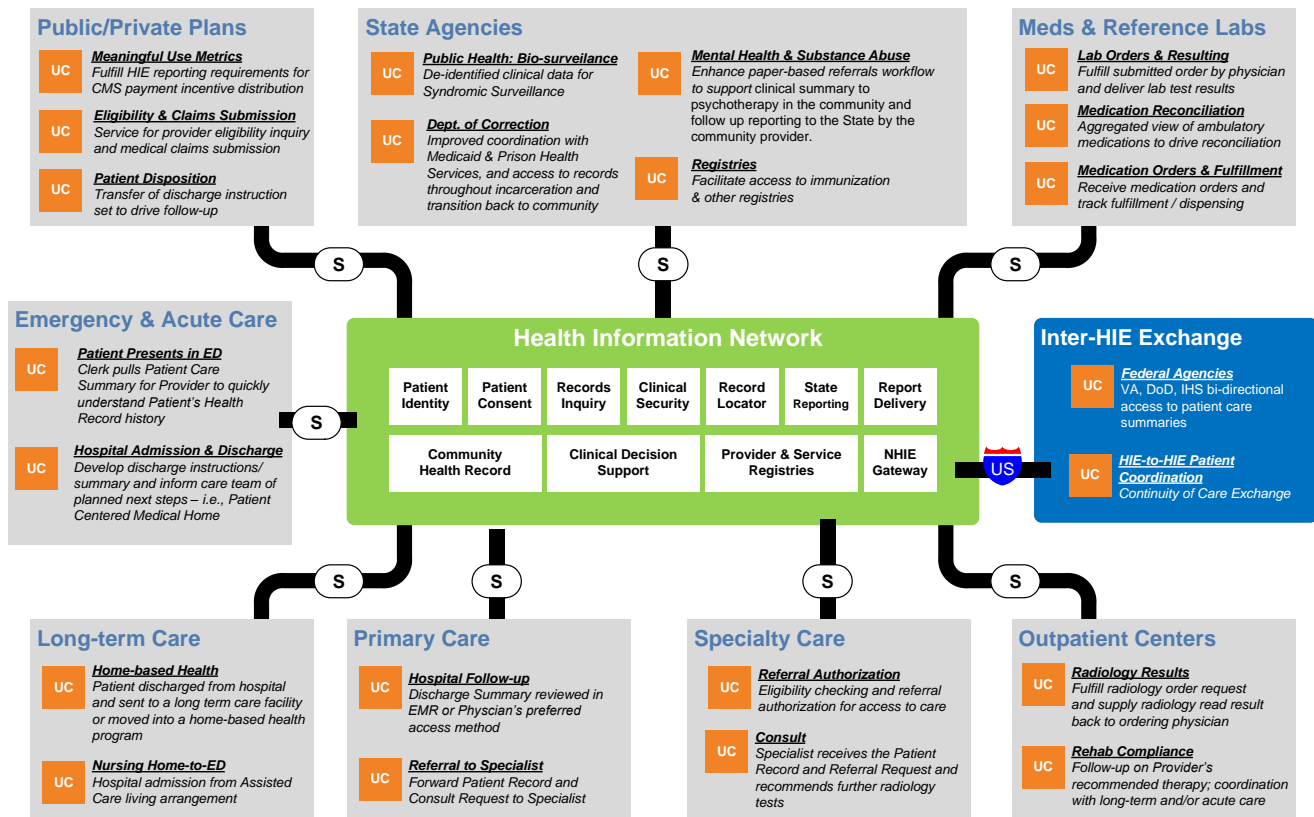
12. Accessibility requirements (as defined in Arkansas Act 1227 of 1999)

Medicity complies with all state and federal laws, rules and regulations.   Medicity's HIE solution will comply with the accessibility requirements as defined in Arkansas Act 1227 of 1999.

Architectural Overview

Medicity recommends hybrid architecture, such as that illustrated in the Arkansas HIE RFI. Our architecture involves configuring a data repository (or edge server) for each data participant and implementing a Record Locator Service (RLS) to query those data repositories and return a complete and consolidated patient record. So, like the Arkansas HIE, we utilize a hybrid federated architecture of decentralized databases that are connected across the exchange to share and exchange information. Our Identity Management Services, which include a Master Patient Index (MPI) and a Record Locator Service, are used to provide patient/record matching services.

As illustrated below, Medicity uses a central backbone of integrated platforms and applications that reflect the Arkansas vision of HIE architecture and allows the secure and timely exchange of patient clinical data.

Public/Private Plans

- UC **Meaningful Use Metrics**
  Fulfill HIE reporting requirements for CMS payment incentive distribution
- UC **Eligibility & Claims Submission**
  Service for provider eligibility inquiry and medical claims submission
- UC **Patient Disposition**
  Transfer of discharge instruction set to drive follow-up

State Agencies

- UC **Public Health: Bio-surveilance**
  De-identified clinical data for Syndromic Surveillance
- UC **Dept. of Correction**
  Improved coordination with Medicaid & Prison Health Services, and access to records throughout incarceration and transition back to community
- UC **Mental Health & Substance Abuse**
  Enhance paper-based referrals workflow to support clinical summary to psychotherapy in the community and follow up reporting to the State by the community provider.
- UC **Registries**
  Facilitate access to immunization & other registries

Meds & Reference Labs

- UC **Lab Orders & Resulting**
  Fulfill submitted order by physician and deliver lab test results
- UC **Medication Reconciliation**
  Aggregated view of ambulatory medications to drive reconciliation
- UC **Medication Orders & Fulfillment**
  Receive medication orders and track fulfillment / dispensing

Emergency & Acute Care

- UC **Patient Presents in ED**
  Clerk pulls Patient Care Summary for Provider to quickly understand Patient's Health Record history
- UC **Hospital Admission & Discharge**
  Develop discharge instructions/ summary and inform care team of planned next steps – i.e., Patient Centered Medical Home

Health Information Network

Patient Identity | Patient Consent | Records Inquiry | Clinical Security | Record Locator | State Reporting | Report Delivery

Community Health Record | Clinical Decision Support | Provider & Service Registries | NHIE Gateway

Inter-HIE Exchange

- UC **Federal Agencies**
  VA, DoD, IHS bi-directional access to patient care summaries
- UC **HIE-to-HIE Patient Coordination**
  Continuity of Care Exchange

Long-term Care

- UC **Home-based Health**
  Patient discharged from hospital and sent to a long term care facility or moved into a home-based health program
- UC **Nursing Home-to-ED**
  Hospital admission from Assisted Care living arrangement

Primary Care

- UC **Hospital Follow-up**
  Discharge Summary reviewed in EMR or Physcian's preferred access method
- UC **Referral to Specialist**
  Forward Patient Record and Consult Request to Specialist

Specialty Care

- UC **Referral Authorization**
  Eligibility checking and referral authorization for access to care
- UC **Consult**
  Specialist receives the Patient Record and Referral Request and recommends further radiology tests

Outpatient Centers

- UC **Radiology Results**
  Fulfill radiology order request and supply radiology read result back to ordering physician
- UC **Rehab Compliance**
  Follow-up on Provider's recommended therapy; coordination with long-term and/or acute care

Core Requirements

Master Patient Index (MPI):

Medicity's Identity Management Service provides accurate patient identification across information systems and care locations (acute care and ambulatory) within the HIE.

When patients visit and receive treatment and service from multiple caregivers across multiple locations (owned practices, affiliated practices, and hospitals), the respective caregivers all contribute to the patient's clinical record. The need to reconcile the patient's identity when accessing a record becomes of utmost importance. The Medicity Community Matching Patient Index (CMPI) accurately matches data to a consolidated patient record, assuring correct patient identity, regardless of the patient identification and registration source system.

The index is updated in real time with demographic feeds from physician and hospital information systems. New records received through system interfaces are adjudicated by the CMPI and matched with an existing patient or entered as a new patient into the index with appropriate notation in the record written to Medicity's clinical data repository.

Medicity's Record Locator Service (RLS) works in concert with Medicity's Identity Management Service to efficiently construct an indexed location for all relevant patient data. When an authorized request for patient information is made, the RLS queries the indexed data repositories for relevant data and assembles the response

The CMPI uses both probabilistic and deterministic logic to adjudicate patients. Its algorithms can be customized to meet both the requirements of the data sources and the organization's tolerance for error. In cases where a match is not certain (as defined by the policy makers), two separate patients are created and flagged for manual resolution.

The CMPI toolkit provides a mechanism for viewing and resolving potential duplicate records, as well as logs detailing mismatched identities. The CMPI includes a utility to help administrators identify and merge or link duplicate items in the index. The system automatically generates a log of duplicates and potential duplicates. An administrator can then:

- Merge patients—Two patient records, including identifiers, are merged into one record.
- Link patients—Two patient records are linked, leaving both records in the index. A common use case for such linkage involves maiden and married names. The patient with the maiden name remains in the database but is linked to the patient with the married name. The system recognizes both patients as one person.
- Manage patient demographics and identifiers—Administrators can view, edit, and delete patient demographics and identifiers.

Data Dictionary and Vocabulary Standardization:

Medicity's Data Services are able to queue, manage, validate, translate, standardize, and de-identify health information. Medicity supports all core healthcare vocabulary standards including: LOINC, SNOMED CT, RxNorm, NDC, MULTUM, MicroMedix, Medispan, UMLS, ICD -9CM, ICD-10, HCPCS, and

CPT4 and proprietary formats from both inbound and outbound perspectives. While we support these standards, we are not limited in any way to using only these standards and code sets.

Medicity supports all accepted standards including, but not limited to, HL7, ANSI, ASTM CCR, CCD, DICOM, and other recognized national standards. In addition, our Data Services leverage LOINC, SNOMED CT, RxNorm, ICD, HCPCS, CPT,

Provider Index and Directory:

Medicity's Master Provider Registry leverages our unparalleled vision of extensible MPI technology. Our Identity Management Services goes beyond patient matching, ensuring that provider (doctors, nurses, and hospitals) and health plan information is also consistent throughout hospital records. Medicity's CMPI supports a wide variety of provider, payor, patient, and other identifiers. The CMPI abstracts external identifiers from their associated data using internal identifiers that allow any number of external identifiers to be linked to a logical entity like a payor or a provider. This system allows clients to adopt new identifiers as a part of regular operational procedures.

Medicity uses the NPI number as an attribute in the Provider Index. Where present, we also use NPI number for provider matching. Medicity applications support a wide variety of identifiers such as DEA number, NPIN, State License number, Medicare Provider ID, Assigning Authority Number, source System Number, etc. for Provider indexing. Our provider indexing system can support a number of external identifiers from contributing systems, which have been abstracted from their associated data entities using internal identifiers that allow any number of external identifiers to be linked to a logical entity.

External identifiers are classified by types that are established and maintained by the application administrator. This allows our customers to adopt new identifiers as needed as a part of regular operational procedures rather than relying on extended development processes. The adoption of new identifiers does not require any additional FTEs for support because of the way the data is extracted when a new identifier is brought into play and is not a manual process. For example, when the National Provider Identifier (NPI) became a requirement in 2007, the administrator simply used an application configuration tool to add the new identifier to those already used to identify providers. A place to store this identifier became immediately available to the associated processes. This configuration process also supports typical content edits and formatting requirements.

An operational process dictates how registered providers in the other HIE map into the broader HIE Provider Directory. Once the provider list is obtained, a fast match operation determines whether there is a good match existing entries or if new entries are required. The end result is a provider index that includes key demographic data and their location on the grid. (See the table below)

Name	Location	Specialty	Phone	Grid Address
Dr. John Doe	Family Medical	Primary Care	555-888-8888	HIE—West
Dr. Jane Doe	Cardiology Clinic	Cardiology	555-999-9999	HIE—East

Once initialized, an operational process will need to be defined between the two HIEs for ongoing updates to the Provider Directory at the higher level.

M E D I C I T Y

Standards-based:

Medicity solutions excel in tying together disparate systems, whether from the perspective of technology, nomenclature, data-element or coding-transactions standards. Our products support the accepted standards for the electronic communication of healthcare data including support for HITSP-approved standards. Our team is actively engaged in the NHIN/HITSP process, which enables us to under-stand what the latest recognized interoperability standards mean to our product line and gives us a head start on product development to support future standards.

Medicity has extensive experience in implementing all core healthcare industry standards, including:

- *Supported transaction sets*. Medicity's products support all HIPAA-standard transaction sets including HL7 and ANSI. Among the standards we support are ASTM, LOINC, SNOMED CT, RxNorm, ICD -9CM, ICD-10, X12N, NCPDP, HCPCS, and CPT. While we support these standards, we are not limited in any way to using only these standards and code sets.

- *Supported message formats*. Medicity has an extensive library of connecting and routing adaptors with the most prevalent being SOAP over HTTPS. These adaptors have been used with a wide variety of commercially available hospital, reference lab, payer, practice management, and electronic medical records products. The adaptors support a multitude of message payloads including HL7 v2.x - 3.x, ASTM CCR, NHIN CCD, NCPDP, ANSI HIPAA, XML-CCR, 3rd party proprietary formats, bridge interfaces, and many more. In addition, Medicity supports the HITSP format rationalization standard of Continuity of Care Document (CCD), which harmonizes the current HL7 v3 CDA and the ASTM CCR.

- *Supported IHE interoperability standards*. Medicity supports the following IHE (Integrating the Healthcare Enterprise) interoperability service standards: patient search and exchange (PIX/PDQ support) services, clinical document search and exchange services (XDS/XDA), and auditing (ATNA) services.

- *Supported national HIE-to-HIE standards*. While demonstrating Lab and Biosurveillance use cases during the NHIN trial implementation, Medicity showed it supports both current and new technical messaging and security standards for secure HIE-to-HIE exchange, including: core Microsoft-certified web service extensions, X.509 Certificate Token, SAML, and SOAP message security.

Security:

The security of patient healthcare information is of paramount importance to Medicity. We employ multiple safeguards to protect PHI, including strong authentication, and authorization based on patient relationship and organizational role, auditing and logging, and secure protocols.

2-factor Authentication. Medicity's supports authentication via username/password credentials and optional second-factor authentication such as biometrics or other token. Authentication can take place against LDAP, Active Directory or Medicity's internal user directory.

Relationship-based Access. Data is routed to a physician based on that physician's relationship to the patient. For example, if the physician is the ordering provider or the attending physician as noted in the HL7 data, that result or report will be routed to that physician. Role-based security measures (described below) ensure that each organization can also specify staff's relationship to a physician, thus allowing the applicable personnel to access the information they need to perform their jobs.

Role-based Access. A physician or staff member's level of access to a patient's clinical data in ProAccess is determined by their role in the organization. The role-based permissions security authorization occurs at the application level. A system administrator is able to create various user roles (for example, Physician, Clinical Staff, and User Admin), and then assign various application access levels to these roles. For example, a Physician or Clinical Staff role may have access to view patient clinical information, where as a User Admin role may be limited to only the administrative functions for adding new users and viewing application usage reports.

When a new user account is created, the user must be assigned to one of the user roles that is active for that organization. It is the user role that dictates which parts of the application, and which patients, the user is allowed to see. When the user logs into the system, the user's application access rights are checked, so ProAccess knows the appropriate parts of the application to display for this specific user. The same is true when a user searches for a patient. Each time a user conducts a patient search, the application checks to see if this user has rights to view a patient(s) before it returns a list of patients for the user to choose from.

Auditing and Logging. The Medicity Novo Grid provides extensive audit capabilities. A log is kept of every transaction received by the Grid. The log documents every step in the information exchange process—whether the transaction is discarded (because the receiver did not want the information), who it was sent to, when it was sent and received, what happened to the data upon receipt (whether it was printed, viewed or acknowledged by an EMR interface). In addition, the original message as it was received, along with the message as it was transformed for delivery to the practice (such as to an EMR) is kept in the audit to assist in troubleshooting.

Medicity's solution secures data with audits to both views and distribution. In support of HIPAA and patient privacy, Medicity products provide comprehensive logging capabilities. Any access to the system, as well as to patient data, is logged and can be viewed online. System administrators can view any audit trail information throughout the system. Physician users can view audit trails pertaining to the staff users that work on their behalf in their practice office. The information retained includes, but is not

limited to, date, time, user ID, patient identifier, medical record number, event types, data types, and data identifiers.

Medicity's solution includes a variety of standard reports to enable an organization to ensure and demonstrate HIPAA compliance.

Encryption. Medicity uses a variety of secure protocols throughout our solution.

Medicity's Novo Grid. The Agent Grid platform employs the concept of Nodes which house Agents deployed across the Grid. Nodes generate 2048-bit RSA public/private key pairs when initially installed. The Private Key is kept by the Node and the Public Key is distributed to all Nodes participating on the Grid. Nodes employ a unique way of encrypting information and sharing keys using both symmetric and asymmetric key technologies. Payloads are encrypted with randomly generated 2048-bit AES symmetric keys.

ProAccess Application. All receiving systems such as ProAccess, AutoPrint, and EMRs utilize SSL 128-bit encryption to guarantee message security.

Non-Repudiation. Medicity uses various security measures to ensure non-repudiation, including strong authentication of users and contributing systems, and encryption to ensure data integrity.

- Strong user authentication is required to validate access. On the Medicity Novo Grid, user access to data only occurs within the local area network environment where the agent is installed (behind the hospital or practice firewall). Medicity's ProAccess Application users are identified by user ID, classified by type, and authenticated with a password and an optional second factor.
- Medicity establishes point-to-point interfaces with data contributors, as well as secured communications between Novo Agents and the Grid, to ensure that information flowing into the system comes directly from those contributors.
- To ensure data integrity throughout the Medicity Care Collaboration Suite, Medicity uses a combination of mechanisms such as SSL, PKI, one-way hashing of certain data types such as user passwords, and symmetric encryption of clinical data at-rest. Medicity also uses highly secured web services (signed with X.509 certificates) throughout its Service Oriented Architecture.

Flexible:

Medicity—Taking a leadership role in defining future HIE standards. Medicity is confident we can complete any current and future required HIE competencies. In addition to supporting all currently accepted standards, Medicity has taken an active leadership role in the definition, implementation and testing of future HIE standards.

- *NHIN Trial Implementations*. Medicity has been an active participant in the NHIN Trial Implementations. Medicity, together with its client, the Delaware Health Information Network (DHIN), was one of nine entities across the country to be awarded contracts this year to deploy trial implementations of the National Health Information Network (NHIN). While representing the State of Delaware during demonstration of the EHR Lab Results and Biosurveillance use cases, Medicity helped to successfully implement both current and new HIE-to-HIE exchange standards.

- *NHIN Workgroups*. Medicity personnel have served on the following NHIN Workgroups: Leadership and Communications; Core Content Services; Data Use and Reciprocal Support Agreement; Security and Technical Core Services; Testing Workgroup. The goal of the NHIN Workgroups is to help harmonize and integrate standards that will support interoperability among healthcare organizations and systems. Medicity was 100% compliant with the Core Services testing requirements in evaluation of the project.

  During 2009 Medicity was and continues to be under contract with the Office of the National Chairman (ONC) to participate in the NHIN Cooperative, serving on many committees and cross functional teams. During 2009, Medicity actively participated in the following NHIN Workgroups:

- NHIN Cooperative Leadership

  - NHIN Specifications Factory (Profile, Privacy, Messaging and other Sub Teams)
  - NHIN Operating Policy and Procedure
  - NHIN Architecture and Implementation Guidance
  - NHIN Test Infrastructure
  - CONNECT Code-A-Thon Participation

As part of our NHIN participation, Medicity has been instrumental in playing a leading role in the development of the following NHIN documents:

- Founding members of the new HITSP Consumer Preferences Tiger Team
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- Coauthored the Patient Discovery Service Interface Specification
- Coauthored Breach Discovery and Notification document
- Contributor to the NHIN Architectural Overview document
- Participated in the creation of new versions of several specifications:
- Query for Documents Services Interface Specification
- Retrieve Documents Service Interface Specification
- Messaging Platform Service Interface Specification

Medicity is currently in the process of contracting with the NHIN to participate in one of the NHIN Emergent Extension Projects.

- *CCHIT Network Certification Criteria*. CCHIT is not certifying HIE vendors specifically but, rather, intends to certify "networks" that have deployed HIE technology. A Medicity customer, the Delaware Health Information Network, is an alpha and beta partner to help validate the criteria for CCHIT Network Certification. As a result, Medicity anticipates our customer will be one of the first companies to receive this certification.

- *HL7 Membership*. Medicity is a member of HL7 and has been involved with the development of international healthcare standards that provide a framework (and related standards) for the exchange, integration, sharing and retrieval of electronic health information.

Other Features

Partnership Opportunities

Medicity's experience with the development of HIE organizations is founded on the creation of the first state-wide HIE, Delaware Health Information Network (DHIN) and our work supporting the initial phases of Orange County Regional Health Information Organization (OCPRHIO). Medicity helped both DHIN and OCPRHIO identify the "Big Picture" including infrastructure costs. We have worked through the complexity of implementation governance, which generally includes executive leadership, steering committee(s), program management, project managers and other stakeholders. Medicity will provide assigned account managers who will work with Arkansas HIE and act as client-friendly liaisons. Medicity will work with SHARE to identify and address system capabilities improvements as we move our products forward. We have been successful in undertaking the complexity associated with the numerous parallel activities that must be managed and coordinated more or less simultaneously in order to bring all functions live successfully and meet business objectives.

Specifically, while the initial implementation of the HIE may have a specific beginning and end with a focused set of objectives, the overall program is ongoing and will need a higher level of support in order to succeed. Medicity can provide the experience and resources to assure not only a successful relationship, but the foundation for a successful HIE.

Addenda

Medicity-The Standard for Meaningful HIE

Medicity was established in 2000 to create software solutions that enable the electronic flow of clinical information—within and across healthcare organizations—essential to improving the timeliness and quality of patient care. Since our inception ten years ago, Medicity has grown to become the largest and most successful health information exchange vendor with the largest market share and broadest connected ecosystem of connected providers - representing over 700 hospitals and leading state and regional RHIOs/HIEs—across more than 250,000 end users across 25,000+ physician practices. In the most recently published KLAS report, Medicity was recognized as having the most live HIE customers. With the fastest growing customer base, Medicity is quickly becoming the standard for meaningful HIE.

What differentiates Medicity from the rest of the vendors? It's really an issue of focus and experience and where we started. As an Emergency Department Physician, Medicity's CEO, Dr. Kipp Lassetter, was often frustrated with the lack of patient information available when he needed it most—while delivering acute patient care. In working and talking with other physicians, he learned they were equally frustrated with the lack of timely clinical information available to them in their practices and the negative impacts they experienced in terms of added cost, decreased revenue, inefficient care coordination and a diminished quality of service. They told him that to be most effective, they needed access to information anytime, anywhere. They needed to exchange and receive information from other clinicians on a patient's care team throughout the healthcare community, as well as to collaborate with their peers when delivering care.

As such, Dr. Lassetter decided to do something about it and developed the Medicity solutions, in conjunction with a team of brilliant technologists and IT services professionals. That was more than ten years ago and today, Medicity is the market leader and is honored to serve hundreds of hospitals, health systems, and leading HIEs, one of the two largest national reference labs nationwide (LabCorp). We have also played a leadership role in the National Health Information Network (NHIN). In partnership with our clients, we have delivered integration with more than 50 unique EMR applications and more than 150 HIS applications, including every major HIS vendor. Most importantly, every day hundreds of thousands of physicians and other clinical and administrative users rely on Medicity solutions to deliver better patient care, increase efficiency, enhance revenue, strengthen their competitive position and reduce costs.

MEDICITY

We believe Medicity is well suited to help CRMC achieve its goals due to the unique value we bring to meet the challenge:

- **Medicity is the standard for HIE**

  o The largest ecosystem of connected providers—nationwide
  o #1 in KLAS for Acute to Ambulatory HIE

- **Continuous innovation**

  o First to market with a "community" MPI (patent pending)
  o Patented technology for HIE (Novo Grid®)

- **Proven results**

  o No other HIE vendor has the demonstrated success across the broadest spectrum of customers with proven results for enhancing patient care and improving operating efficiency

- **Unparalleled experience**

  o With the most experience in the HIE market across a broad spectrum of live customer deployments, Medicity brings to each implementation a unique perspective on what works - what doesn't - and the best recommended deployment approach for you to achieve your goals—on time and on budget

- **Medicity is open**

  o iNexx is the first and only open, modular, Health 4.0 platform for healthcare IT app design and delivery—bringing robust content, proactive care communities, and meaningful applications together in a coherent, connected environment

Service Level Agreement

1. OVERVIEW

This Service Level Agreement *("**SLA**")* sets forth service level definitions, measurements thereof and related MEDICITY service standards that will be in effect during the Term of the Agreement. Service Availability

1.1. Definition.

"**Service Availability***"* or "**Available**" is defined as the amount of time that the Software (a) is available to The Community Site and Providers for the Software's intended purpose and is capable of receiving and accurately processing data and responding to patient demographic and result delivery requests as entered by external Providers, as the case may be; and (b) meets the performance benchmarks, including without limitation the Specifications relating to the Software, as set forth in an SOW or otherwise defined in writing by the parties, but specifically excludes hardware issues, telecommunications failures in the connection from Medicity to the Providers hosting site, internet related issues (including but not limited to periods of high latency, DNS issues, denial of service attacks, ISP failures and similar types of internet issues) and problems in the data format caused by changes made by data providers not agreed to in advance by MEDICITY (collectively, the "**Exclusions**"*).*

1.2. Measurement.

The measurement for Service Availability for a given month is calculated by dividing the total number of minutes the Software was Available (excluding Scheduled Down Time Periods as defined in Section 3.1 of this **Exhibit J**) during the Hours of Operation (defined below) for such month by the total number of minutes in the Hours of Operation (excluding Scheduled Down Time Periods) for such month and multiplying the result by 100. The number of minutes in a given month will be calculated based on the number of days in such month. "**Hours of Operation**" shall mean 24 hours multiplied by the number of days in the particular month.

1.3. Minimum Service Level Requirement for Service Availability.

The minimum Service Availability for the Software will be as follows:

(i) From the date the service is first made available until the Go-Live Date (identified as the "**Warranty Period**"), a Service Availability of 98% shall apply; and

(ii) After such Warranty Period, a Service Availability of 99.8% measured on a running average calculated over each calendar quarter shall apply. MEDICITY shall immediately report any Software downtime (or unavailability) to the identified resource of "Community Site Manager."

2. SCHEDULED DOWN TIME

2.1. Definition.

There will be a scheduled down time period for MEDICITY's performance of system maintenance, backup and upgrade functions for the Software (the "**Scheduled Down Time Period**"*).* The Scheduled Down Time Period shall mean between 2:00 AM EST and 5:00 AM EST (adjusted seasonally for Daylight Savings Time) on an as requested basis given 24 our notification. All other regular daily maintenance is expected to allow the system to remain functional but possibly at a rate of 50% reduction in message processing capabilities but less than a 25% degradation in user performance.

2.2. Measurement.

The measurement for scheduled down time for the Software is the time elapsed from the time that the Software is not Available to fully perform operations to when the Software becomes Available to fully perform operations. MEDICITY shall maintain daily system logs setting forth scheduled system down time and tracking outages. MEDICITY shall provide these logs, if requested, to The Community Site Manager on a monthly basis.

2.3. Required Maintenance Work.

In the event that MEDICITY or its third-party provider determines, in its reasonable discretion, that maintenance work is required to be performed outside of the Scheduled Down Time Period, MEDICITY shall provide The Community Site Manager electronic mail or other notice of the required maintenance work at least seventy-two (72) hours in advance. This work will be performed by MEDICITY at a mutually agreed upon time. Upon the Parties mutual agreement, any maintenance work performed pursuant to such notice shall be considered part of Scheduled Down Time Period

3. MONITORING

3.1. Monitoring.

Beginning on the Go Live Date MEDICITY shall be responsible for ensuring that the servers on which the Software is stored are monitored either on a 6 am Eastern time to 5:30 pm Pacific time or on a 24 x 7 x 365 basis for correct operation, capacity and performance based on contracted options. Automated alerts shall be utilized using Medicity's monitoring framework which identifies issues based not only on network and system related issues but also based on content related thresholds. Medicity will work with The Community Site Manager to identify the appropriate thresholds that ensure minimal false positive alerts.

4. UPDATES

4.1. Updates and Enhancements.

MEDICITY shall make Updates for the Software available to The Community Site. Updates for corrections, bugs and error fixes shall be provided to The Community Site in accordance with Section 6 below and other Updates (including, without limitation enhancements or improvements to the Software) shall be provided to The Community Site promptly upon their availability.

5. PROBLEM RESOLUTION PROCEDURES

MEDICITY's technical support team shall prioritize and respond to problems and requests according to the severity levels ("**Severity Level(s)**") set forth below.

5.1. Severity Level 1 Problems.

A "**Severity Level 1 Problem**" is defined as an event (but specifically excluding any Exclusions) that halts or has a significant impact on the use of the Software by The Community Site (including its Providers), including without limitation, the following:

- Any event that significantly disrupts or threatens to disrupt Service Availability to a Provider.
- Any online application outage that significantly impacts the Service Availability.
- Consistent degradation of performance (response time or function) of the Software that significantly impairs service to Providers or any repeating, unresolved incidents that have significant impact on the Service Availability, operations of its Providers.

5.2. Severity Level 2 Problems.

A "**Severity Level 2 Problem**" is defined as a situation where the Software has lost some level of functionality but is still accessible by the Providers and the lost functionality does not significantly impact their use of the Software, but a workaround does not exist.

5.3. Severity Level 3 Problems.

A "**Severity Level 3 Problem**" is defined as a situation where the Software has lost some level of functionality but is still accessible by Providers, and the lost functionality does not significantly impact its Providers, and a workaround exists.

5.4. Severity Level 4 Problems.

A "**Severity Level 4 Problem**" is defined as a situation where the Software has complete functionality and is still accessible by the Providers, but a bug exists.

5.5. Response Time Calculation.

"**Response Time**" is the total amount of time it takes MEDICITY to respond to a request, calculated from the earlier of (a) the time a request arrives at MEDICITY via telephone call or email regarding the problem or (b) the time MEDICITY otherwise discovers the problem, until: 1) the appropriate technician or administrator begins to address the request, and 2) contact is made to the requesting party with a status update if the problem was not addressed on the initial call.

5.6. Problem Resolution Response Effort.

Severity Level 1 problems take precedence and are handled first. Problems will be continually monitored and MEDICITY shall notify The Community Site Manager of any existing problem and update The Community Site Manager pursuant to the following Problem Resolution Response Table:

PROBLEM SEVERITY LEVEL

COMMUNITY SITE MANAGER NOTIFICATION

MINIMUM UPDATE FREQUENCY AND METHOD OF UPDATE

Within 1 hour discovery by Medicity	Every 2 hours by email or telephone
Within 5 hours of discovery by Medicity	Every 5 hours by email
Within 12 hours of discovery by Medicity	Every 12 hours by email
By next business day of discovery by Medicity	Every 24 hours by email

Severity Level 1 Problems: MEDICITY will assign sufficient resources to resolve the problems as quickly as possible with the goal of maintaining the service levels agreed to herein. For Severity Level 1 problems, MEDICITY will use continuous effort to resolve the problem until an official fix is installed, tested and the Software is back to normal operations. Severity Level 1 problems will be continually monitored and the Community Site Manager will be kept informed through frequent telephone contact, with minimum contact as set forth in the Problem Resolution Response Table set forth above.

Severity Level 2 Problems: MEDICITY will assign sufficient resources required to fix the problem in the target resolution timeframe. Severity Level 2 problems will have a target resolution of 24 hours to 3 days dependent on the corrective actions required to return the Software to normal operations. These corrective actions and resolution timeframes will be communicated to Community Site Manager by MEDICITY.

Severity Level 3 Problems: During the business hours of 8 a.m. to 8 p.m. eastern, MEDICITY will assign sufficient resources to fix the problem based on a mutually agreed upon target resolution timeframe. Severity Level 3 problems will have a target resolution of 48 hours to 5 days dependent on the corrective actions required to return the Software to normal operations.

Severity Level 4 Problems: The target resolution timeframe for Severity Level 4 Problems will be determined separately for each problem by the Community Site Manager and MEDICITY representatives.

5.7. Escalation Procedures.

In every case, until a problem is corrected, MEDICITY's representative will continue to monitor the situation to determine the problem status, corrective action(s) underway, and provide status information to the Community Site Manager at least as frequently as set forth in the Problem Resolution Response Table set forth above.

MEDICITY shall prepare and provide to Community Site Manager an escalation document that provides the specific designated contact names and numbers for MEDICITY and Community Site Manager, Problems will be addressed by MEDICITY immediately upon notification from Community Site Manager or upon self-determination that such problem exists, and will escalate within MEDICITY's organization in the following fashion to ensure effective resolution.

5.8. Severity Level 1 Escalation.

Time Zero to Hour 4 - MEDICITY manager and customer service organization respond immediately to the Severity Level 1 event and actively seek a problem resolution.

Hour 4 - MEDICITY's development management is notified and is actively working the event.

Hour 8 - MEDICITY's Vice-President of Engineering and/or Operations and Senior Vice President of Business Development are notified and involved in the problem resolution.

Hour 10 - MEDICITY's executive management including the CTO and/or Chief Architect is notified and involved in the problem resolution.

After ten (10) hours, MEDICITY commits that at least one system specialist is dedicated to the severity event to work continuously until a solution is implemented and tested and approved by Community Site Manager.

5.9. Severity Level 2 Escalation.

Time Zero to Hour 48 - MEDICITY's manager and the appropriate organizations will work to resolve the problem. MEDICITY agrees to provide a solution by the next business day within 48 hours of problem identification. After forty-eight (48) hours, provided that the problem is not due to the fault of the Community Site Organization or one of its feeder systems, MEDICITY will escalate the problem in accordance with Severity Level 1 escalation procedures highlighted above.

5.10. Severity Level 3 Escalation.

Time Zero to Hour 72 - MEDICITY's manager and the appropriate organizations will work to resolve the problem. MEDICITY agrees to provide a solution within 72 hours of problem identification. After seventy-two (72) hours, MEDICITY's Vice-President of Engineering and/or Operations is notified and involved in the problem resolution.

5.11. Severity Level 4 Escalation.

MEDICITY's manager and the appropriate organizations will work to resolve the problem according to a resolution timeframe agreed upon by the parties.

5.12. Compliance Monitoring and Reporting.

5.12.1   Definition.

Compliance with the service level requirements specified in this document will be monitored by

MEDICITY and reported by MEDICITY in writing to Community Site Manager on a monthly

basis.

5.12.2   Measurement.

Compliance reports shall be considered delivered to Community Site Manager upon arrival of a

hard copy report or an electronic document with a verifiable return receipt at the Community

Site's physical address.

6.   SOFTWARE APPLICATION RESPONSE TIME

6.1. Definition.

"**Software Response Time**" is defined as either (a) the amount of time from the Software's receipt of a test result or other inquiry from a Provider, for MEDICITY to forward the request or other inquiry to the Community Site; or (b) the amount of time from the Software's receipt of test results or other Provider inquiry

responses from the Community Site, for MEDICITY to forward such test results or other Provider inquiry responses to the appropriate Provider, as applicable.

6.2. Measurement.

The measurement for Software Response Time for a given month is calculated for each ADT or Accession in such month and shall be calculated only during periods of Service Availability.

6.3. Minimum Service Level Requirement for Software Response Time.

The Software Response Time shall be 30 minutes or less in at least 95% of the time on a calendar quarter basis. If MEDICITY exceeds such Software Response Time threshold, MEDICITY will provide notice to the Community Site Manager as provided in the written standard operating procedures developed pursuant to **Section** 6.6 of the Agreement.

7. ROOT CAUSE ANALYSIS AND NON-PERFORMANCE CREDITS

7.1. Service Commitment.

Should Service Availability, Problem Resolution Response Efforts or any other MEDICITY service level commitment under this SLA (each referred to as a "**Service Commitment**") fall below the minimum service level requirement for a given month set forth in this **Exhibit J,** MEDICITY shall perform a root cause analysis to determine the cause of such Service Commitment failure(s), develop a written proposed corrective action plan ("**CA Plan**") and schedule a meeting with Community Site Manager to discuss such proposed CA Plan including, without limitation, during the Warrantee Period. MEDICITY shall obtain the Community Site Manager's approval of the final CA Plan and shall implement the final CA Plan to avoid recurrence of the Service Commitment failure(s).

7.2. Service Credits for each Service Commitment Failure.

For each Service Availability and Software Response Time Service Commitment failure in a given quarter, MEDICITY shall be subject to the service level credits set forth below in this **Section** 7.2 and MEDICITY shall provide Community Site with a credit for such quarter in accordance with the table below. Nothing in the foregoing shall serve to limit any other rights or remedies available to Community Site under the Agreement for MEDICITY's failure to comply with the service levels set forth herein. The parties acknowledge and agree that MEDICITY shall not pay service credits for Service Commitment failures during the Warrantee Period.

Service Commitment Tier	Service Availability Service Commitment Percentage	Credit*
Tier 1	Service Availability is between 99.5% and 100.0%	No Credit; Service Commitment is met.
Tier 2	Service Availability is between 98.5% and 99.4%	TBD
Tier3	Service Availability is between 96.5% and 98.4%	TBD
Tier 4	Service Availability is below 96.4%	TBD

Sample Integrated Vendors/Products

HIT Vendors	Products
Clinical, Financial, and Administrative Systems	
A4 Health Systems	Confidence®
Cerner	Classic
Department of Defense Military Health System—Home Grown/SAIC	ICDB from CHCS
Eclipsys	E7000
IDX	CareCast™ (LastWord)
Keane	InSight
McKesson	STAR™
McKesson	Series™
MEDITECH	Magic, CS ITS
QuadraMed	Affinity®
Siemens Medical Systems	Allegra®
Siemens Medical Systems	MedSeries4®
Siemens Medical Systems	Unity®
Siemens Medical Systems	Invision®
Siemens Medical Systems	Soarian®
Interface Engines	
Intersystems	Rhapsody
Quovadx	Cloverleaf® HUBLlink
SeeBeyond Technologies	Datagate, eGate
Siemens Medical Systems	OPENLink®
Sybase	ImPACT
Sybase	MicroScript

HIT Vendors	Products
Laboratory Systems	
Cerner	Classic PathNet™
Cerner	Citation™
Cerner	Millennium™
Cerner	CoPath™
Cortex Medical Management Systems, Inc.	The Gold Standard™
Creative Computer Applications, Inc. (CCA)	CyberLAB™
IMPAC	Tamtron PowerPath
McKesson	ALG
McKesson	Horizon™
McKesson	Star™
MEDITECH	Magic
Misys	Antrim™
Misys	FlexiLab®
NovoVision	AP
Psyche	WindoPath
SCC	SoftLab™
Pharmacy Systems	
Cerner	MSMeds™
Eclipsys	E7000
IDX	CareCast™ (LastWord)
McKesson	Star™
MEDITECH	Magic
MediWare	WORx
Omnicell	Omnicell™

HIT Vendors	Products
Medication Systems	
Cardinal Healthcare	Pyxis
Cardiology Systems	
Epiphany	Cardio
GE Healthcare	Muse
Heartbase	Heartbase
McKesson	MedCon
Philips	Tracemaster™
Philips	Xcelera
Seattle Systems	Apollo
Scheduling Systems	
IDX	FlowCast™
Physician Credentialing Systems	
Morrisey, Inc.	Medical Staff Office (MSO)
Radiology Systems	
Arrendale Associates, Inc.	TAeSeries™
Cerner	Classic RadNet™
Cerner	QuadRIS™
Cerner	MARS™
Cerner	MSMeds™
Cerner	RadPlus
IDX	ImageCast™
McKesson	Star™
MEDITECH	Magic & Client Server
Misys	Misys Radiology
Siemens Medical Systems	Novius®

HIT Vendors	Products
Talk Technology	Talk Technology(TM)
Picture Archiving and Communication Systems	
AGFA	PACS
Amicus	PACS
Dynamic Imaging	PACS
FUJI Synapse	PACS
GE Healthcare	PACS
Philips	PACS
Philips Healthcare	PACS
McKesson	PACS
Sectra	PACS
Stentor	PACS
Emergency Department Systems	
Logicare	OnRecord™
T- Systems	T SystemEV
Wellsoft Corporation	EDIS
Transcription Systems	
Cerner	CoPath™
Computer Programs and Systems, Inc. (CPSI)	Chartlink™
Dictaphone Corporation	Dictaphone®
Dolbey and Company	STAT Report Maxima M2
Lanier	Cquence®
MEDITECH	Magic & Client Server
MedQuist	MedQuist
Precyse	PrecyseNet®
SoftMed Systems, Inc.	ChartScript®
Transcend Services, Inc.	Transcend

HIT Vendors	Products
AZRON	AZRON Physician Management System
eClinicalWorks	eClinicalWorks
GE Healthcare	Logician
IDX	GroupCast™, FlowCast™ (IDX Outpatient)
Misys	Vision
MediNotes	Clinician
Noteworthy Medical System	Noteworthy EMR Server
Pragmedic	PragRecord (EMR) PragManage (PMS)
STI Computer	ChartMaker® Practice Manager
Varian	ARIA
Dentimax	DentiMax 2008 (Dental PMS)
Document Imaging Systems	
McKesson	Horizon Portal Patient Folder
3M/SoftMed	SoftMed Document Imaging, Reports and e-Signature
Valco Data Systems	Hospital Department Suite—Document Imaging
Enterprise Master Patient Index	
Eclipsys	EMPI
Initiate	Identity Hub
MEDITECH	EMPI/Magic

HIT Vendors	Products	Technology
Ambulatory EHR Web Services Interfaces		
Allscripts	TouchWorks	
Allscripts	A4	
Allscripts	Healthmatics	
Allscripts	Misys EMR 8.0	
Altos	OncoEMR	
ALZ	EMR	
Amicore	PenChart	
Cerner	Powerworks	
Companion Technologies	Companion EMR	
DOCS	SOAPware	
eClinicalWorks	EMR	
Eclipsys	Medinotes e EMR	
e-MDS	e-MDS Chart	
Emdeon	PCN/Practice Managment	
emsCharts	emsCharts	
EPIC	EpicCare Ambulatory EMR	
GE Healthcare	Centricity EMR	
GE Healthcare	Logician	
GEMMS	ONE	
Greenway	PrimeSuite	
Hamilton Scientific, Ltd.	myPatientCharts	
Keane	Practice Management	
McKesson	Practice Partner Patient Records	
McKesson	Horizon	
MEDENT	EMR/EHR	

HIT Vendors	Products	Technology
Medgate	EMR	
MedicWare	EMR	
MIE	WebChart EMR	
Misys	Vision	
NextGen	EMR	
Noteworthy	EMR	
Oceris	FlexMedical	
Sage Health	Sage Intergy EHR	
WebMD	Medical Manager	
Payor-based Systems		
OAO Healthcare Solutions	MC400	
MDFlow	MCIS	
MZI Healthcare	EZ Cap	